MY LIFE IN A MAN-MADE JUNGLE

Photograph by E. H. Baldrick

Ngagi, a rare and magnificent mountain gorilla of the

MY LIFE IN A MAN-MADE JUNGLE

by

BELLE J. BENCHLEY

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FOREWORD

A Pledge of Simplicity

The best introduction I can make to this story of my life in the San Diego Zoo is my very earnest assurance that it is not a scientific volume. Even if there were a demand for a scientific book based upon a general zoological collection, I should never be so bold as to offer one. For I am not a scientist, not even a naturalist. I began my association with wild life far too late even to step across the border into truly scientific territory. I am only an animal lover, and even the full measure of that came late in life. But I shall never cease to rejoice that it did not come too late.

I have told to young and old, finding my audience from kindergartens and universities, many of the stories in the pages that follow. The same sympathetic attention has greeted them, for almost everybody is, like myself, greatly fascinated by wild animals, both free and captive. All are eager to hear true incidents of their private lives: how they live; what they do; something of their social behaviour. Intelligent people are not looking for lurid tales of hairbreadth escapes, dangerous thrills from impossible adventures, and hideous nightmares of brutal obscenities. It is the little intimate details people enjoy.

The interest in wild animals is universal. It has no limitations—neither youth nor age, ignorance nor intelligence. A collection of wild animals in a zoo speaks to all races of man the one language of nature. It is no unusual circumstance in any zoo to hear seven or eight languages spoken in the space of a few feet in a few minutes. And the wild creatures know

each language if it is spoken in the right tone, and their response to the tiniest Japanese labourer is as spontaneous and vivid as to the greatest English scholar.

Now and then I meet someone who says, 'I don't like animals'. I know that that person has missed the proper chance to know animals and has thus been deprived of one of the richest experiences in life. I cannot keep from pitying him, for to know animals is to love them.

The greatest compensation anyone receives for working with animals—and some of the work is hard and unpleasant —is the response from the creatures themselves. And if we who know them well can pass on a little of this compensation we shall have done only our duty; so in this book I am trying to share the interesting life I have led and friends I have found. Nothing has come to me that you could not have received under the same circumstances if you had been as lucky as I. For my coming to the zoo, like most of the good things in life, just happened to me. I had nothing to do with it, particularly in the beginning.

BELLE J. BENCHLEY

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PART 1

Everything to Learn

CHAPTER I

On the Edge of the Jungle

If you can imagine yourself a middle-aged woman suddenly turned loose in a jungle of unknown creatures, because of the unexpected necessity of supporting yourself and a son of high-school age, you will have some idea of the consternation, to put it mildly, with which I found myself, in the autumn of 1925, embarked upon a career in the Zoological Garden of San Diego. I did not choose to work in a zoo. I was appointed to a job there by a Civil Service Commission.

The position was that of bookkeeper, but I knew no more of bookkeeping, accounting, or the conduct of a large business than I did of the care and exhibition of wild animals. The auditor instructed me in that regard in the evening, and during odd moments of the day I sought to learn what I could about animals from their keepers, who thought me a very queer bookkeeper indeed. Until then I had looked upon running a zoo as most people do: very little business, and a group of animals for you to treat as you would your dog, your horse, or your canary. In fact, the zoo was there for my entertainment and I had always taken it for granted.

Even now I fail to recognize the steps leading to my advancement to the headship of the zoo staff, except that the zoo was poorly organized and so day by day I was forced to assume added responsibility and to rely upon my own judgement.

The telephone played an important part in my training. I had been at work less than two hours when it rang and a man's voice boomed, 'Say, we want you to settle a bet. How

long is the tail of a hippopotamus?' and in the next few days I was called upon to diagnose and prescribe for the illness of a sick canary, settle a dispute about the gestation period of an elephant, and identify a snake from a very vague description. When I did not know the answer I did not bluff; I tried in so far as it was possible to obtain the information.

At the end of a year and seven months I was advanced to my present position. The president of the Zoological Society told me not long ago that he had tested me by 'getting things in a hell of a mess' and then going East to see what I would do with them in his absence. Apparently he was satisfied.

I am often asked, 'What is required of a zoo director? How should a person fit himself for such a vocation?'

I still do not know the answers, for nothing that I should recommend as essential has been part of my own life or preparation, except that during my childhood I wandered over the hills of Point Loma, living a life of make-believe in which rabbits, squirrels, and birds were people with whom I communed. Even then, I did not particularly wish to catch and handle these creatures. I preferred to sit quietly watching them for long periods, during which they became increasingly bold and familiar. Animals, like young children, prefer to make all the advances, and the extension of a hand in friendship will often disrupt a growing intimacy on the part of the wild creature; and I sometimes think that individually I have much less love for or interest in animals than I have collectively.

One more fact remains on the credit side of my early life. With my younger sisters and brothers, I was taught to identify birds and shells, and to classify flowers. Our toys and beads were constructed of seashells; our pictures made of dried sea mosses, ferns, and grasses, and we cultivated the faculty of accurately observing and properly interpreting what we saw. The beautiful rolling hills and rugged rocky beaches were our playground. Our toy soldiers were the yellow violets which we hooked together by their sturdy chins and pulled until one or the other lost its head. One of my

favourite caches for pretty pebbles was a long, hanging titmouse nest. But when I had a choice of subjects, just after leaving elementary school, and later, I chose nothing of a scientific nature except those subjects required for graduation.

More than love of animals is required to make a zoo director or an animal man. I have often had to dismiss men, despite their love of animals, because they lacked that something which, for want of a better name, is called animal instinct, a vague term inadequately describing something that one either has or has not. Animals discern it first. You may not recognize that you have it until the animal makes you aware—by the nature of his response—that a bond of confidence exists between you.

The success of a zoo director is also based upon knowledge of the animal world obtained from general study and from the continuous intelligent observation of his collection. This interest must be so great as to amount to a curiosity that, try as you will, you can never satisfy. Then the information gained must be so organized that it becomes knowledge rooted in memory and so profound as to be usable instantly, automatically, even in new situations. Caution must never be relaxed for a second, a chance never taken or a gate left unlocked for a moment. Even the person who is careful by nature must learn, usually through experience, what this sort of caution entails.

Finally, one must have unlimited patience for trying, and trying again, because we learn by the trial-and-error method more generally in zoo business than in any other in the world. This implies a very careful, slow beginning based upon logical conclusions from past experience, and close watching. If things go right a more rapid advance is made; if not, then cautiously, oh so cautiously, substitutions are made. Patience is particularly necessary for the solution of the many problems in feeding and maintenance of health that must inevitably arise in any collection, especially in one that is growing constantly.

Everything to Learn

I have never been one of the people who try to pierce the veil concealing the future, but once one of our employees invited me to go with her to a palmist of great reputation to see what she would tell us. For the first and only time in my life I listened to a fortune-teller read the past and predict the future, and she convinced me that there is something in palmistry after all.

After vainly trying to get me to answer leading questions, she said, 'I seem to see you surrounded by small birds; I can't see exactly what they are, but they are of various sizes; perhaps you are interested in a chicken ranch?'

I merely smiled.

A little later she said, 'I still see live things around you but they are not all chickens or birds; they seem to be animals, like baby sheep and perhaps little calves. I can't tell what they are. Yes, you live on a ranch.'

Still I refused to comment.

'You certainly puzzle me,' she said finally, looking up. 'You seem to be surrounded by all sorts of building material, blue prints and stones, and I see something very unconventional about your building; it does not seem to be dwellings. I still feel the animal influence near you but, whatever it is you do, you are directing it and other people take orders from you.' Suddenly she shot another question at me. 'Are you an architect?'

In spite of my resolution not to divulge anything, I answered, 'No.'

She didn't find out what I did or who I was, so far as I know, but she was 'warm', as children say, when she ventured to describe the many occupations that she saw in my life. She was right on every count and perhaps she described the position of a zoo director better than I ever could.

CHAPTER II

Watchful Waiting

Much of my intimate knowledge of the animals' habits and tastes has been acquired by prying, through long hours of watching, into their private lives.

From the very beginning I spent every spare minute out with the animals and with the men, themselves a new order of being whom I came finally to understand and respect; and sometimes I wondered if my interest would ever wane. It did not. Instead, it gradually deepened into concern for some animals and love for others. I began to have favourites, not of my choosing but of theirs. But the most flattering experience of my whole life was the greeting I received from Dinah, a ragged, unlovable, hideously human old chimpanzee, when I came back to the Garden after my first holiday.

Dinah had been for me the least attractive creature in the zoo. She had pulled the hair from her arms and shoulders until she was nearly naked. She was partially paralysed in one leg, and whenever I passed her cage she would leer at me with such a half-idiotic grin that usually I went by with nothing more than a hurried greeting. I had no idea she liked me or would miss me until, after my absence, she hailed me from afar, so obviously and noisily glad to see me that I was compelled to respond.

After that we became friends and I was perhaps her only sincere mourner when, a few years later, she died because of the enormous ball of coarse black hair that completely filled her stomach—the hair that she had been plucking for years from her own body and that of her mate, whom she kept as ragged as herself.

Dinah was the first of many intimacies, some of which were quite clandestine, and one of which saved me from serious injury.

I have come to scorn the theory of some people who believe that everything can be learned in the wild and who, therefore, dislike zoos. Where could they go and in the course of the morning watch a snake shed its skin, a young parrot learn to fly, and a newborn fawn 'freeze' at the command of its young mother? Have they ever seen even one of these things happen in the wild? Probably not, but I have seen all of them in the zoo.

The mother of the fawn was a Panama doe from Nicaragua. She always came to the fence to greet me when I passed and I never failed to give her at least one lump of sugar which, in my ignorance, I considered a rare treat for a deer. But one morning something seemed wrong. She started toward me but stopped before reaching the fence. I coaxed her to come on but she appeared nervous and kept looking beyond me outside the paddock. As I could see nothing alarming I started to walk on, but within a few steps almost trampled on a tiny spotted fawn.

Glancing back, I saw that the new little mother was trying to look unconcerned, but she was really very tense. When she saw me watching, she strolled indirectly to the far corner of the fence and began to coax me to come over there—our positions completely reversed. I looked down at the newborn thing lying so flat and still, its hair scarcely dry, its slender legs curled under it and its head turned back against its shoulder. The little body was so soft and supple that it curved right into a shallow hole between the uncovered roots of a eucalyptus tree. Its background colour matched the tawny brown of the bark; its darker spots seemed to be but shadows of the leaves above. It scarcely breathed, but its great eyes were wide with the fear that I might pounce upon it.

The mother nickered or whinnied a command to lie still, or 'freeze'. Already the fawn understood. The little body

stiffened slightly, but the soft eyes, beseeching me not to see it, did not waver. I gazed an instant longer, for it was such a pretty sight that I was loath to leave. Then, without revealing to the anxious mother that I had discovered the hiding place, I walked briskly away.

As soon as I had gone a safe distance, she stamped her feet upon the hard ground of her pen. The tiny fawn jumped to his feet and ran with all possible speed to the fence, the mesh of which looked far too small to permit him to slip through. But as he approached it he straightened out his thin fore legs until they were almost horizontal in front of him, and thrust them between the second and third mesh from the ground. Then, with one push, he sent his slim body through with never a break in his swift direct rush to mother and safety. She comforted him as all mothers can. After a soft touch of her nose and lips, a lap on his coat with her tongue, his fear of the outside world and its walking enemies vanished. She selected another spot for him in some dust inside the fence and once more his body melted from view.

Many times since I have seen a deer mother send her baby through the fence to hide in the dry grass or weeds across the road until she called him home. A few have been lost, perhaps because they became confused and slipped out under a turnstile, or possibly because some of the wild predatory animals—the coyotes, foxes, coons, and badgers that we are always trapping—destroyed them. Occasionally, in the morning, we have discovered little tracks in the dust valleys between the paddocks and have trailed a lost baby to find it weak with hunger because it was unable to slip back into the proper pen.

In our large pastures the antelope and deer hide their babies far from the regular haunts of the herd just as they would in the wild. Several mothers will take their young to a particularly suitable spot and leave them together, sheltered for hours from the cruelty that fathers usually exhibit towards male young born in the limited confines of zoo paddocks. Soon these babies become so wary and fleet of foot

that they can keep out of the way themselves. But until they can run with the herd, the mothers slip quietly, one at a time, down to the bottom of the sloping pasture to nurse their young. There is real co-operation between them. If all went down at once it would be noticed immediately by the bucks.

The complete understanding between the young deer and their mothers and the remote control exercised by the latter is one of the miracles of the animal world. The privilege of witnessing it in the case of the Panama deer was one of the great rewards of watchful waiting.

CHAPTER III

In the Presence of Danger

Whenever I am asked, 'Aren't you ever afraid?' I reply that it would be foolish not to be fearful of dangerous creatures. I would not employ a man who was not afraid at the proper time; afraid to do a silly, careless thing that might jeopardize himself or others. People often say I wear a 'charm' because I have never been seriously hurt. I try to, yes—a charm of calmness, self-control, and poise which animals recognize and to which they will nearly always respond; a charm of intelligent understanding of their state of mind. Animals have their moods just as we do, and do not always desire attention. I know when they invite me and when they warn me to keep my distance, and I refuse, even at the risk of being a poor showman, to intrude or force my attentions upon them when they show plainly that they prefer to be let alone.

I have been afraid of certain animals at certain times, and have on occasion been more alarmed for the animal than for myself; I have worried lest a man be put into a dangerous position by circumstances beyond his control; and I always shiver with fear when I see people hold their children within reach of a dangerous, tricky monkey, or poke their fingers into the crate of an animal that is being moved. But I have never been too much afraid to do things that needed doing.

Arriving unusually early at the zoo one morning, I was attracted by a loud commotion in the patio of several cages occupied by small monkeys and baboons. Supposing that a

drive to exterminate rats was in progress, I pushed open the gate and walked in.

To my consternation the drive proved to be not of rats but one to return to their cage a pair of half-grown baboons that had escaped during the night. Baboons, when cornered or excited, are very dangerous animals and do not hesitate to attack anything that interferes with them.

Fortunately, Teddy and his mate—entranced by their partial freedom which had prompted them to visit and quarrel with neighbouring baboons—had not yet discovered that they could earn complete freedom by climbing over the top of the cages. Now several hastily assembled and alarmed keepers were urging them, with clubs and broomsticks, and with shouts and yells, towards their enclosure.

I stood perfectly still, neither through bravery nor fear, but because there was no place to go. I could not have gone back through the gate without the two baboons escaping with me.

Unbeknown to anyone I had been making friends with Teddy, the handsome male member of the pair. He had been kind enough to put his big hand through the wire of his cage and accept fruit, candy, and other delicacies from me. He had also allowed me, when no-one else was present, to clasp his hand, and he had gently taken mine in his, smacking his lips together, uttering low but friendly grunts, and showing me in many ways that he accepted me as a pretty good type of baboon.

Seeing me standing there, apparently so calm, with nothing in my hands that looked alarming, Teddy started to gallop towards me. The men cried out a warning of danger. But I did not move.

When a few paces away, Teddy suddenly stopped and began to smack his lips and grunt. Then he held out his hand. I took it, and the head keeper, who had entered the patio a moment before, quietly stepped up and took his other hand. Between us we led Teddy, followed by his mate, into their cage. They were thankful for their return to the security and

shelter of home, and I was grateful for the friendship that had served me so well.

Some time after this a visitor rushed into the office, on the reptile man's day off, to report that a snake was out of its cage. 'I think it is a rattlesnake,' he said, but as visitors think every loose snake a rattlesnake I merely smiled. However, when we arrived at the reptile house, where a group of people had gathered and were staring at something stretched along the top of a cage ten inches higher than my head, I saw a very large rattlesnake. Theoretically, I know all about picking up snakes and felt no repugnance about touching them, but to say I was not frightened by the situation in which I found myself would be untrue.

Something had to be done, so I played a trick upon the snake that he would not have played upon me had our situations been reversed. I walked to the other side of the cage and sneaked up behind him. He lay perfectly still, hoping not to be discovered. I stretched forth my arm slowly. He noticed the movement and lifted his head about an inch. Then I seized him, just behind his raised head, in a grip that was cruelly tight, and swung his heavy body off the cage until it hung down, almost long enough to touch the floor.

As I carried him through the crowd and on upstairs, I wondered how I was going to let him loose. Finally, drawing down a snake box from a shelf with my free hand, I lowered the rattlesnake slowly into it and then released my hold so gradually that he was free before he knew it. Then I banged the door shut. This caused him to rattle, but neither at that moment nor before did he make any effort to strike.

I do not wish this to happen often, but I am glad that it did once, for it showed me that, in an emergency, I could make myself do what had to be done.

CHAPTER IV

Stop and Reconnoitre

Every zoo-keeper knows that the most dangerous period in a zoo worker's life is the time when he has conquered his initial timidity and begins to relax his vigilance. That is when the first, and sometimes the last, injury is inflicted by an animal; it is the time when we *think* we know more about animals than we ever *actually* do later on in our experience.

After a few days of swamping around our elephants, one of our animal men, a former roustabout among the animals of a circus, decided he was sufficiently experienced to do a little showing off, and so went in early one morning to release the elephants. Empress, full of sly tricks, reached around with her tail to locate him as he stood beside her, and then suddenly edged over, quickly pressing him against the concrete wall of the building and breaking two ribs. Only Queenie's timely trumpeting, which distracted Empress's attention, saved him from further injury. During the second of Empress's distraction, he slipped to his knees and rapidly crawled away.

A second incident of similar nature involved another foolhardy man and, which made it more serious, a second keeper, Charley Smith, who had just joined the zoo's force. The first man had come to us directly from a circus, after misrepresenting his experience. We had already become convinced he was unsuitable, but because we were sorely in need of help, owing to a sudden death on our staff, we had permitted him to remain. I asked him to show Charley our feeding routine. The man, swelled with importance, immediately tried to

show off his superior skill to Smith, whom he had known by reputation as an excellent animal man. That night when it was time to put the orang-outangs to bed, instead of doing it in the conventional way he turned Maggie, our tame young orang, into the corridor to drink her bottle of milk. Smith questioned the procedure, but the man was beset with his own importance and claimed that that was our custom.

Maggie thought it a fine place for supper and found much to interest her, but when the time came for her to be locked up for the night it was quite another matter. She turned on Smith as the culprit, and only his experience with animals prevented both men from being badly injured, and Maggie from escaping. As it was both men were badly bitten. The man's employment terminated that night.

I must confess that I, too, went through a 'smarty' period. Only luck turned into a comedy what might easily have been a tragedy.

Maggie, then four years old, had ridden with me in the car many times to school classes and parties where I was to speak. Henry, her keeper, had always accompanied us, but, as I had never had to call upon him for help, I did not realize that my control of Maggie was largely due to his presence. I offered Maggie as an exhibit for a class in anthropology being held in our Research Laboratory. Henry was away on vacation.

When the students arrived Maggie was sound asleep in a large, strong shifting crate and I anticipated no trouble. The instructor went up, stuck his hand inside and took hold of her. That was a mistake, but I could not stop him.

Roused from her nap, Maggie looked out through her bars and did not like what she saw. She tried to withdraw from the unfamiliar touch and failed. So she pursed out her lips and blew noisily. Instead of being warned, the instructor laughed boisterously and tightened his grip. Maggie then did the one thing she had been taught not to do—she tried to bite him. Ordering him back, I spoke quietly to her. She greeted me enthusiastically and held out her long arms to

come to me. Before letting her do so, however, I sent the students quietly into the adjoining classroom. Then I carried Maggie in.

At first all went well. Maggie sat on a table, complacent and interested in the strange scene. Then the instructor again seized her head without first speaking to her and turned it toward the pupils. In doing so he pushed her hair around in a disorderly way. This was too much. Maggie was off in a flash.

Back into the other room she lunged, swinging her heavy body between her long arms. But instead of going into her cage she mounted the autopsy table. Grabbing the soap container she emptied its liquid contents on to the table top. Then she seized a brush, turned on the water, and began to scrub the table vigorously until her attention was caught by a hose above her head. Grabbing this, she proceeded to swing back and forth along the slippery table in utter abandon, showing every tooth in her glee. I might as well have ordered the waves to stand still.

Suddenly the cord holding the hose broke. On the rebound the hose hit the light fixture, an enormous bowl, and it came down with a crash, showering Maggie with glass. With a shriek of terror she skated along the full length of the table, leaped into her box, and whirled around to face us, all in one motion. Then, as I dropped the barred door to shut her in, she looked at me with sullen little eyes that seemed to say, 'Let this be a lesson to you, Smarty'; and it was.

CHAPTER V

Anything New To-day?

Although my employment in a zoo was looked upon as a joke by many of my friends, they were always ready to listen to news of what we were doing in the zoo and it did not take much to encourage me to talk. Gradually the circle of interested friends increased to large groups, then schools and other organizations began to invite me to speak to them, and year after year the number of speaking engagements increased until it reached 150 half-hour talks last year. It is always my personal news or gossip about the animals that is of greatest interest, and often people sit motionless for several moments after I cease talking, just 'seeing' the creatures described. Not infrequently, when I have tried to be a little funny about some zoo mother and her babe, I have noticed some of the listeners furtively wiping their eyes—caught by the pathos that earlier moved me, the first-hand observer.

But people are also interested in the serious functions of a zoo such as education, research, and character building, and I have learned that word-of-mouth publicity is the best kind, for it 'gets the people talking', which is the aim of all advertising. The more I talked about the animals the greater the number of visitors to the zoo.

Then the newspapers became interested and began to call upon us for news. At first the reporters offered many fantastic suggestions, like trumped-up birthday parties and fake fights, but these were rejected; the news must be legitimate, or it wasn't news.

I found it very trying, at first, to be included in the news

releases, because during the many years that my father was a sheriff our whole family was taught to dodge reporters. But from the day I came to the zoo to work I have had to share so much in the publicity that gradually I have lost my fear of the press, my personal modesty, and my pride, and am now reconciled even to seeing myself in print in ungainly smocks such as no stout woman should ever wear and with my hair streaming in what one reporter said was 'no particular style'.

A good zoo story is always 'news' and one such story well illustrated will bring more visitors than a thousand regular ads. Most zoo employees, however, are so close to the scene that they fail to see the story. For that reason the reporters of our local press are free to roam around in quest of their own material. They have co-operated with us fully and our mutual understanding is complete, so much so that they have occasionally held up a release of the news of some rare birth until it was certain the baby would live, or until its eyes were open, and it could see and be seen by the public that would rush to the zoo as soon as its arrival was announced.

Of course, errors will creep in despite every precaution. For example, not long ago a press photographer who had always been exceedingly careful to obtain correct data photographed a great Galapagos tortoise looking up at a small tortoise above his head. Unable to locate either Mr. Perkins, the keeper of the reptiles, or myself, he obtained some information from a swamper (a man who cleans cages) and turned in a picture which, when published, bore the caption, 'Gertie sees her little son, born in the San Diego Zoo, for the first time.' I am sure the photographer did not fully realize the enormity of his error. In the first place, the two tortoises were of entirely different species; second, 'Gertie' was a male, and, third, the baby was not born, it was hatched. Moreover, no Galapagos tortoise has ever yet been hatched in captivity, and such an event would make zoo history. I am still explaining and denying that nothing of this kind has happened in San Diego.

But not only is it the reporter who sometimes makes an error of judgement. Once, in a burst of crusader's zeal, I prepared an article in which I enumerated several common fallacies about animals and then proceeded to deny each in turn, offering proof of the untruth. The article was published, and what did the readers do? They glanced at the heading, saw it was by me, read what they thought was confirmation of their favourite beliefs, skipped the denials, and thenceforth quoted me as an authority for the legends that snakes milk cows, that birds mate for life, and that porcupines throw their quills.

Occasionally something happens at the zoo that is so fantastic as to be unbelievable. In the case of our venture in fleas even the press was sceptical.

Early in the summer of 1938, when I returned from a speaking engagement, I found the following telegram awaiting me:

SHIP AIR MAIL TUESDAY NIGHT FIFTY DOG OR SAND FLEAS

BENSON

That was a new one. I could not believe my eyes and asked my secretary if she had had the wording verified. Yes, she had.

It was already Tuesday afternoon. So I hastily summoned the veterinarian and the head keeper for a consultation. Where were we going to find fifty fleas? At last the doctor suggested the dog pound. We agreed that it was a good idea and so he obtained a magnetized comb, a clean bottle and some loose hairs. Then he went to the city shelter and asked permission to comb the stray dogs. The Humane Officer was amazed, but since he could see nothing wrong with the request he granted it. Before long the doctor had the required number of fleas merrily hopping about on the hairs in the bottle. That night we wrapped the bottle in metal and airmailed it.

The next morning a letter arrived from Benson, explaining that the fleas were desired for an outdoor exhibit to advertise a flea circus he was putting on at his private zoologi-

cal park at Nashua, New Hampshire. It was early for fleas in the East, so he had appealed to California, which, he said, always had fleas. He asked us if we would be so kind as to furnish a weekly shipment to keep his exhibit going throughout the summer. In exchange he would give us snakes, both cobras and kraits, rare and valuable.

We were very glad to make such a trade and so, week after week, every Tuesday night, a shipment of fleas went out by air. It was not always easy to get fleas, and one Tuesday I was forced to rush home and comb my pet springer spaniel to fill out the order. We missed the last mail out of the sub-station that evening and had to take the package to the main office. When questioned as to its contents my secretary said that it contained fleas.

'FLEAS?' shouted the clerk. 'Don't you know you can't send pests to another state by mail? It's against the regulations.'

'Is that so?' she asked. 'Well, we've been doing it for weeks.'

'Maybe so, but you aren't doing it to-night,' he retorted, and meant it.

I telegraphed Benson for instructions. He wired back, 'Try air express,' but that, too, proved impossible. So the flea shipping ceased until, one day, Benson telegraphed that the Postmaster General had consented to our exporting fleas if the purpose for which they were to be used was educational, that is, if they were to be displayed in a scientific exhibit. Shipping was resumed.

Even I saw the possibilities of this story and gave it to a reporter, who sent it out over the Associated Press. But this flea trade aroused so much suspicion in the San Francisco office of the Associated Press that they sent back a 'hot wire' to the San Diego office asking why on earth anyone should send to San Diego for fleas. What was there about them that made them better than any other fleas? And how dare anyone imply that only California had fleas?

The local reporter consulted me for verification and to-

gether we prepared an answer. The reason we had been asked for fleas was that San Diego had the best fleas in the country, a superior quality of flea, grown fat and wise upon the choicest of the tourist crop. Knowing this, the Eastern client of the zoo had not only refused offers of fleas from elsewhere but was willing to pay a much higher price for fleas from San Diego. There was no question as to the authenticity of the deal.

This account was published far and wide—wherever the Associated Press reaches out—and for months new stories, letters, and jokes in famous columns appeared about our venture in the flea market. We even made the editorial page of a paper in Oregon. The editors stated that they had always looked upon a flea as something to hide, or deny, or speak of only in the quiet of the family circle. Now, a woman had not only boasted of the quality and number of her fleas but had created such a demand for them that she was flying them regularly to a profitable market. Henceforth they wanted it known that they, too, had fleas: fine, intelligent and upstanding fleas, raised from the finest blood in the land, fleas that would stand comparison with any fleas. Were there any buyers?

CHAPTER VI

Feeding the Zoo

One of the activities of the zoo that always makes a good story is the feeding of the animals. We have not, however, made our feeding a matter of public show, first because of our very large cages and second because many of the animals do not enjoy their food if the public is too close.

Before I had been in the zoo a week I discovered that the variety of its commissary far surpassed any collection of food I could ever have imagined. It included, in part, mocking-bird food, puppy meal, bone, charcoal, cuttlefish, pigeons, chickens, guinea-pigs and rabbits, rats, mice of every size and colour, lizards, small snakes, frogs, tadpoles, meal worms, small sardines, ground and cut-up mackerel, dried shrimp; rape, mustard, celery seed, milo, barley, wheat, two kinds of hay, corn and oats—whole, ground, rolled, and sprouted; green and dry alfalfa, sorghum, red clover; dried prunes, raisins, bananas, apples, oranges by the truckload, water-melons by the ton, and spineless cactus; fifteen quarts of whole milk daily, dozens of pigeons', chickens', and insects' eggs; buttermilk powder; cod-liver oil in fifty-gallon drums; meat served ground, sliced, or in chunks, with bone and hide, and without; and so on and on.

Supplying the food, however, proved to be the smallest part of feeding. In order to learn how to care for each group of animals, birds, and reptiles I decided to spend certain hours of every day with a keeper until I could supervise at least the care of his group. I started on thirty-seven cages containing several hundred psittacine birds of about forty-

five species, under the impression that parrots ate a uniform kind of food. Alas for my preconceived theories! Some parrots delighted in searching for sunflower seeds among a pan of chaff; others absolutely refused to hunt seeds out of shells and waste. One lorikeet demanded that his bread be wet and sloppy with milk and sweet with honey; another insisted that it be dry and unsweetened, but liked his puppy meal mixed with a little water and Karo syrup; while a third had to have his bread in chunks so that he could fly with the pieces to a tree, where he munched them contentedly.

Then I discovered that all I had learned must be modified to meet the demands of other collections, and that birds in other groups were as individual in their demands as were the parrots. For example, one dove would eat only if her food were placed on a high platform, whereas her mate would eat only if it were on the floor where he could scratch for it in sand.

Even queerer things went on among the reptiles. Vicious-looking lizards ate daintily of blooming plants and tender leaves; other handsome and seemingly angelic snakes and lizards relished nothing except another snake or lizard. One of our greatest feeding difficulties is to provide sufficient food for cannibalistic reptiles and for birds that will eat only snakes and lizards. Our most acute current problem is to keep sufficient snakes on hand for the dangerous banded krait, who refuses any snake with a strong musky odour and will eat only our local gopher or bull snakes of a certain size. Fortunately, many of the cannibalistic snakes will not, except as a last resort, eat snakes of their own species. Thus we are able to keep king snakes together in cages and in some instances have even persuaded them to eat mice entirely. But if a rattler, the king's hereditary enemy, or a gopher snake, is put into the cage, the king will instantly strike at its throat, aiming with beautiful precision, then wrap its strong constrictor body around the newcomer until life is extinguished, and consume it head first, with incredible rapidity and ease.

One amazing example of cannibalism stands out among all

of our experiences. Two eastern king cagemates of nearly identical size persistently refused every sort of food for three months. Then one deigned to accept mice and even small rats until finally he began to eat regularly. His condition became excellent, in striking contrast to that of the other, who continued to reject all food. Finally the state of the second snake became so desperate that Mr. Perkins, our wise snake curator, remarked, 'He's dead and don't know it.'

Two weeks later one of the snakes vanished. Its absence was discovered early in the morning. Mr. Perkins said that the night before the co-operative king had eaten three mice as usual, and that the 'dead' one had refused his portion. Mr. Perkins then went away, leaving the fasting king's mice on the floor in the hope that he would eat them later. Instead, he swallowed the good feeder (including the three mice the latter had eaten earlier that evening). When I was call d to see him, he had a most peculiar appearance. There were knots at regularly spaced intervals along the whole of his now greatly swollen body. It was apparent that in swallowing his companion, actually longer than himself, he had undertaken almost more than he could accomplish; only the tremendous strength of his muscles had enabled him to do it. Retribution was fast and sure. Too weak to fulfil his contract, he was dead within a week.

All food given to reptiles in our zoo is freshly killed and fed while still warm and limp. This is very important and is done primarily to prevent injury to the snake. If he were very hungry he might strike at a living rat and miss, injuring himself even to the extent of breaking his neck by striking his head against the cage. If not hungry, the snake might be destroyed or injured by a live rat left in the cage. This has happened. We try also to be very sure that the snake is ready to eat, so that we shall not waste precious food that would spoil in the heated snake cage if not consumed at once.

There are many ways by which Mr. Perkins knows when any one of his nine hundred reptiles is hungry. He knows how each likes his food and when. He calls his pets by name

and comes back to the zoo late at night to give many of the snakes their dinner. Silence and darkness are the only circumstances in which this, the strangest of all creatures, can enjoy or assimilate its food. Most of the snakes are fed during the day in the manufactured darkness of a snug, warm box. Mr. Perkins raises the guinea-pigs, rats, mice, frogs, meal worms, chickens, and hunts the eggs and tadpoles, lizards and geckos, flowers, weeds, and cactus essential to the daily diet of his charges. His oft-reiterated reply to frequent expressions of pity towards the poor creatures that must be sacrificed by nature's law is, 'I do not deceive the little fellows, but I treat them well as long as they live.'

In addition to a knowledge of feeding habits, I acquired much information—as bookkeeper—about the cost of food. Some mornings were devoted to haggling over the price of fish, which varied from four to fifteen cents a pound; others were consumed in telephoning every bakery in San Diego to obtain sufficient bread, for which I paid from half a cent to five cents a pound. I soon realized that if we were to get the most out of our pathetically inadequate funds, something must be done to fix prices. Within a few months I entered into a contract with one dealer to furnish four hundred pounds of fresh mackerel and sardines every day, delivered to the zoo, for four cents a pound, and into another with a baker to supply ninety pounds of stale bread at one and three-quarter cents a pound. Buying in great quantity brought down the prices and careful watching of corners eliminated much of the waste.

Without doubt the most expensive of the animal tribes to feed in any zoo are the fish-eaters. The obtaining of fresh fish has always been something of a problem, though nothing like the one it is in Eastern zoos. We buy our fish by the year at a contract price per pound. An average of five hundred pounds is consumed daily. The small fishes that we purchase are, preferably, sardines or anchovies; the large fish, the rich Spanish mackerel. We also buy shrimp, squid, or octopus, and clams.

The size and the manner of presentation of the fish are very important. The great elephant seal are taught to eat their fish whole and round, meaning uncleaned. Sea lions tear the fish apart, throwing the pieces around to be gulped by their mates. Trained seals, fur seals, and youngsters are given cleaned fish, with the bony head removed. Every fish-eater I have ever observed swallows the fish without chewing it, the actual work being done in the digestive organs. Baby seals are fed finely ground fish mixed with hot water, salt, and fish oils. Fish oils are used instead of milk because sea mammals are very allergic to milk.

Sea-birds are fed small and ground fish, with an occasional interval of cleaned fish cut into sardine-sized strips dipped in cod-liver or sardine oil to provide temporary relief from the heavy scales of the fish constituting their usual diet. Newly arrived shore birds are fed sand fleas and soft-shell crabs together with ground fish, until they are properly acclimatized to life in the zoo. For weeks at a time I have taken from my beach home daily three pounds of sand fleas and soft-shelled crabs to meet this requirement.

In the central portion of the reptile house is a large room used for no other purpose than the propagation of meal-worms, roaches, rats, and mice of varying colours, to feed not only to reptiles but to birds and animals. No regular supply of rats is available, and there are advantages in raising your own—advantages which include freedom from parasites and disease, and scientific feeding to ensure proper food value for your snakes. We never feed wild rats to our snakes, but we do use wild mice and so encourage them to move into the reptile house and breed there.

It requires two hundred breeding female rats and nearly as many mice to keep up our food requirements. Mothers are selected when young. Those that produce uniformly large litters are kept throughout their productive period; the others are discarded immediately. Full-grown rats are seldom fed to snakes but are turned over to the bird department. As soon as the young rats have opened their eyes many litters

are put together in large containers to grow to proper size. Half-grown or 'mouse-sized' rats are most in demand, although even pink babies are fed, also.

Meal-worms are raised by placing the beetles in large boxes partly filled with middlings, bran, or other grains. This mixture is covered with sacks, kept partly damp. Each beetle lays approximately forty eggs in the spring. The eggs hatch early in summer, the worms or larvæ reaching full growth and entering the pupa stage late in autumn. It takes nearly a year to complete the life cycle. Meal-worms, which are high in fat and vitamin content, are fed to insectivorous birds to supplement the mocking-bird food, insect, and meat diets.

Marmosets and gibbons also thrive upon these fat, tough little worms. Until we began a daily feeding of worms we never succeeded in keeping marmosets out of doors all winter or in breeding them regularly. Each marmoset receives five meal-worms—no more. Experiments have shown that these are enough, and that more are toxic. A visitor, thinking we were foolish, brought meal-worms daily and, in spite of our caution, succeeded in stuffing some of his favourites. This overfeeding brought on severe vomiting, and in one case was blamed for the death of a rare baby marmoset. Marmosets also enjoy spiders and bugs, and are expert hunters, knowing instinctively where to look for their prey. One winter I kept a little Geoffroyi marmoset in my office, turning him loose whenever his cage was being cleaned. He would immediately make a complete round of all corners and dark spots in bookcases and storerooms, searching for spiders.

One day I took several fence lizards, which the man in the reptile house killed for me, to the cage where the Australian kookaburras or 'laughing jackasses' are displayed, to see them eaten. These saucy birds are members of the kingfisher family and will eat small fish, but prefer to catch lizards, small snakes, rats, and mice on land. Scavengers extraordinary, they will accept as palatable anything that is discarded by other creatures.

When I arrived with the lizards, the three kookaburras flew down to the door immediately. Each seized a lizard and hopped up to the strong perch that crosses the cage. There they proceeded to 'kill' their lizards, held by the middle of the body, by beating them against the bark of the perch. First one end of the lizard and then the other was struck against the wood with a resounding whack. When the birds thought the lizards sufficiently dead, they began a curious process of slipping them back and forth, with supreme skill, between their heavy mandibles, biting or squeezing them hard at each shift until they dangled from their broad beaks like limp pieces of flesh, every bone broken or disjointed. After that, they turned the crunched bodies about and swallowed them head first, slowly, inch by inch.

Many other birds eat snakes and lizards. The California roadrunner, a member of the cuckoo family, is credited with living entirely upon snakes and lizards in the more arid regions of his territory. He is a very versatile fellow, comical in appearance, and willing to try anything from young quail to reptiles. These queer birds have a very bad reputation among farmers for killing baby chicks and game birds, but this damage is partly offset by the huge number of rats, mice, and insects they destroy.

We have found them interesting, though difficult birds to keep in captivity. Two that were taken out of the nest when young were raised within the service yard of the small parrot group. Although these cages were covered with fine wire, mice found their way in, especially through the back of the shelters, where the nest boxes hung. When it proved impossible to trap the mice, Karl Koch, our head bird man, decided to turn the roadrunners into mouse-catchers. By imitating the clucking call of the parent bird he was successful in calling the little roadrunners to him for food, some of which consisted of mice. Finally he stopped calling them for anything except mice, and, at the start of each cleaning trip, while he was emptying food pans and cleaning the inside shelters, he would sound his 'mouse' call. The two would hurry to him,

ready to dart through each door as it opened. If no mice were visible the smart birds rushed to every corner to be sure none was overlooked. I have seen them jump four feet off the ground against the front wire of a cage to catch a mouse I had not seen in its quick scurry to escape. These two road-runners kept the entire group of cages free of mice.

An important factor in feeding wild animals is to remember the native background from which in the past they derived their sustenance. Our little finches are made happy by the fact that the man in charge of their cages wanders day after day into the hills and brings back bunches of milkweed and thistles, or grasses just going to seed. They twitter and work and sing merrily about the fresh weeds. Most of the zoo employees, when uprooting plants in their gardens, bring them to the bird man. Cuttings from trees are reserved for the deer, who like to strip them not only of their leaves but of their bark and tender twigs.

Spineless cactus has been planted upon our hillsides and within the next few years the trimmings of these will supply much of the green stuff required by the tortoises and iguanas. Ever since Doctor Wegeforth organized the Zoological Society he has emphasized the importance of planting edible shrubs and fruit-bearing palms and trees. On a recent trip around the world he concerned himself with the fruit-bearing trees and shrubs enjoyed by the animals and birds in every country he visited and arranged for shipping home specimens of all such plants as would be permitted entry into this country. We have also planted many berry bushes, wild grasses, and cactus in the canyons to attract and keep wild birds living free in our grounds and to furnish food to those inside the cages.

A few zoos have worked out scientific formulas of food that are served in cakes both raw and cooked. These are expected to provide all needed vitamins and certain other elements. But we have as yet adhered to the theory that natural uncooked foods, whenever they can be supplied, not only satisfy every need but are more inviting to animals and

encourage them to eat happily, which is part of the joy of living. Vitamin tablets are, of course, given in cases of undernourishment, and brewer's yeast as well as fish oils and salt are part of the commissary of a well-regulated zoo. In addition to actual food, we provide grit and gravel, oyster shell, charcoal, bone meal and honey, corn syrup, or glucose.

The price of food bought for the creatures in the zoo does not, of course, compare with that of food for human consumption. But the quality must be good and the material clean and unpolluted. Fruit need not be fancy or perfect in shape, but must be solid and not overripe. Offsizes and misshapen vegetables are acceptable.

Horse meat was at one time very plentiful and cheap. I speak now of the good old days when horses were given to us and we sold the hides and bones for fabulous prices. When I came to the zoo the top price for a horse was three dollars and the hides and bones could be salvaged for at least two. Now, because of the tremendous use of horse meat in canned dog and cat food, dealing in horse meat is a recognized business and horses are brought in from Arizona and Mexico by the truckload and sold at good prices by the pound. Our horses must be received alive, examined, in some cases tested for disease, and slaughtered in our own plant. The meat is fed raw. We seldom use beef as the cows offered are usually sick, and animals accustomed to horse meat actually prefer it to beef. Other meat such as goats and sheep can be used only for our scavengers.

At present, we consume in an average week the carcasses of four big horses, three thousand pounds of fish, five tons of hay, twelve hundred pounds of various grains and seeds; six hundred pounds of stale bread, three boxes of apples, ten stalks of bananas, fifteen crates of carrots, six lug boxes of topless carrots, ten crates of lettuce, fifteen crates of free greens (trimmings from markets), ninety-six quarts of milk, five dozen eggs, fifteen chickens, one hundred mice and rats, one box of grapefruit, three hundred pounds of oranges, one hundred pounds of potatoes, and a like quantity of tomatoes

in season. The amounts and variety vary with the season, as for example, when fresh peaches, grapes, and pears replace apples. Water-melons are bought by the ton.

Not included in the above list are the cactus and browse that, though necessary, are not daily meals; or such items as the insects we catch or raise, or the lizards, small snakes, and tadpoles that the head man in each department provides upon his own responsibility and through his own efforts. These items are not officially part of our bookkeeping records. However, we do have a standing order with a firm for a gross of frogs every three weeks during certain seasons. We also mix what is known as mocking-bird food, a combination of ground biscuit, grains, meat, dried insects, yolk of hard-boiled egg, mineral oils, and salts for all insectivorous birds.

In the case of some animals it is quantity not quality that is required, and yet, even in the case of such huge creatures as elephants and hippos, high quality is necessary to avoid waste of precious funds. The total cost of feeding our zoo runs into enormous figures. At one time the cost per specimen per month was $.482. With rising costs of foodstuffs, it is now $.78 per specimen per month. This includes the tiny birds and animals as well as the large ones with big appetites —totalling more than three thousand specimens.

CHAPTER VII

My Trail through the Jungle

No zoo director could ever be completely efficient, for to become so would require the skill of the Creator Himself.

A zoo director's aim is the actual conversion of wild creatures of multiple varieties, born to live under conditions made perfect for them through millions of years of evolution, into creatures that must henceforth live in a limited area, upon food brought to them, and with companions selected for them arbitrarily. In other words, a zoo director must duplicate the natural world for the helpless creatures under his control. And the creatures must be clean, well fed, and, above all, happy. Thus only can any organization have a right to confine them.

Our Zoological Society was founded in 1916 by Dr. Harry Wegeforth. Its beginning was a brief notice in the paper asking all who were interested in forming a zoological society to meet with Doctor Wegeforth, at his office. The appeal was answered by four men, all physicians but one. These five organized and incorporated a society which would function as a scientific, non-profitable institution for teaching children to love wild life. As a means of doing this a zoo was to be built which would include a hospital for the study of animal diseases and bettering the condition of wild and domestic animals.

After a few years of building out of little except faith, hope, and junk; of begging, borrowing, doing without; and contributing personal services worth thousands of dollars, a

really creditable collection of animals was acquired. Well-cared-for, but poorly housed, the collection became so popular that the Board of Park Commissioners and the City Council were finally induced to set aside a permanent tract, in Balboa Park, for a zoological garden to be controlled and developed by the Zoological Society. Later the City Charter was amended to provide a small tax to aid its support.

An inventory, taken just before I was employed, listed the number of specimens at 879, of which two hundred were guinea-pigs, guinea fowl, white king pigeons and so forth. Our present collection totals more than three thousand specimens, comfortably housed and uniquely exhibited, and is considered one of the finest in the world.

I am very glad that I started working in a young zoo, and had the pleasure of growing up with it. If I could have foreseen the scope of my present duties at the time I accepted the responsibility I doubt if I would have taken it. Gradually Doctor Wegeforth's burdens became my own—I had to meet with public officials at budget time and speak with such authority and clarity that the zoo budget became, instead of a football for politicians, a matter accepted as given because all were convinced not only of the value of the zoo but of the economy of its administration and the sincerity of my presentations. I have tried in every way to make the most of the finances, the staff, and the facilities of the zoo.

One of the things that seems strange to many people is the relationship between the men employees and me. Having established firm friendships with most of them before I became their 'boss', I feared a little that my elevation to this position would cause some resentment and a change between us. All had worked in the zoo longer than I, and each knew that I had had no previous experience with animals. But I need not have had that anxiety. There is a basis of equality between us, and I shall always be able to learn something from my men. We consult frankly and happily with each other, and when we make a mistake together, it is mine, not theirs; I give orders, and often we talk them over, but they

know that if we cannot agree it is my way that must be done, and that I will be responsible for it.

Of course, they try to put things over on me. Sometimes they and I both know I know they are doing it. They also know that I have their interests at heart; that I will and do fight for them. I have had two head keepers, both experienced animal men. They were very different but both very fine, rugged, uneducated individuals whom I have adored, and trusted.

Norman Johnson was foreman of the zoo when I came and I shall always feel a great sense of obligation to him for the things he taught me and the patience he had with me. After he left we struggled on with a general superintendent who was really in charge of maintenance and building. Then we employed Charley Smith, rough and ready, and a graduate of the circus. I put him in charge of the primate group while I watched to see how he would be apt to take hold as head-keeper. Five years ago he was advanced to that position.

Our relations as Boss and man-Friday are ludicrously funny, and when he thinks he is working me I am overjoyed. There is no real bluffing and nothing underhanded between Charley Smith and me nor is there between any of us; we are all working for one end, here in the zoo, though perhaps by different methods. There is not a man now on the animal staff who is not in the work because he would rather be in it than anywhere else in the world, and because he feels that his contribution is important to the zoo and to the community.

When I came the staff numbered nine animal men. Now there are sixteen. Each man is a story in himself, and bit by bit I have pieced out their pasts from little revelations as we talk. One old bird man had wandered everywhere in the world before finally becoming half-located in California. In the two years before I became director he had worked for and had quit seven jobs, including two at the zoo. Several months after he heard I was in charge, he came back and asked for a job. He knew more about birds than anyone I had ever met, up to that time. In fact, he was one of the best-

informed persons generally I have ever known. I told him we needed him and that he could stay until I fired him, but if he ever again quit in anger he could never come back. His employment lasted twelve years, and he left then because of anger at another man, not at me.

In 1933, as a result of a severe motor accident, I spent eleven weeks in a hospital. The men visited me every day. Sometimes as many as eight would come during the same day or evening. They smuggled Maggie, the orang, and fox puppies, and baby binturongs into my room at noon, and a nurse was always having to run them out at night so that she could fix me up for bed. This attention, the time for which had to be borrowed from their all too few leisure hours, touched me deeply because it showed that I had won a place with them not based upon the relationship of boss and employee, but upon friendship and confidence.

There have been many wonderful experiences, and there have been some of another kind that even now I cannot write about, such as the three days I spent on a witness stand defending the zoo against a damage suit resulting from a child's having run down a rough hillside and been killed. Then there was the time I had to stand outside the gorilla cage entertaining Ngagi for a seemingly endless time to keep him from trying to break into the part where the men were working on an injury to Mbongo's foot. I kept his attention occupied at first, but finally had to resort to a stream of water to hold him away while the work on Mbongo went on; we both knew that Mbongo was suffering. I feared we would shatter their confidence in us, and with it their contentment, which has meant our success with them.

When people sometimes say how lucky I am because of the marvellous years I have had in the zoo, I think, 'Well, yes, I am lucky, but don't forget that the hours have been far longer than anyone else works, and that there have been many weeks with no day off, years with no vacation, and self-imposed privations that nobody else has known must be endured.'

But if ever I were to need any approbation or reward other than the doing, I should only have to remember how Charley Smith sometimes brings an important, greatly admired person out of his past up to me and says, in a way no words can possibly describe, 'I want you to meet MY BOSS!' or how 'Dr. Harry', as we all affectionately call Doctor Wegeforth, after asking me to do something only to learn that it has already been done or started, comments n his matter-of-fact manner, 'Well, we *have* made a good team, haven't we, Old Girl?'

PART 2

Whatever the Day Brings Forth

CHAPTER VI

What I Do at the Zoo

1. SECOND FIDDLE

When asked that puzzling question, 'What do you do at the zoo?' I am often tempted to reply, 'Whatever the day brings forth,' for that, after all, is the sum and substance of my days. Many days begin with a well-laid-out plan that is still unfulfilled when evening arrives because of the situations that constantly arise to attract me from my desk.

It is not unusual for some such event to occur as happened one morning when a girl, breathless from running and excitement, dashed unannounced into my office to tell me that a baby monkey had just been born, that it had been kidnapped by another female, and that the real mother was making no effort to recover it.

Fearful that the two mothers might, in contending for the baby, pull it to pieces, I ran to the monkey square. To my relief, everything was peaceful. The foster-mother mangabey was so tenderly cuddling a baby a few minutes old that there was no danger that she would wilfully destroy it. The other female, who obviously had given birth, appeared to be entirely ignorant of the fact that she had become a mother and was making no effort to claim her baby. The foster mother, who had delivered a stillborn infant several weeks before, had profited by her cagemate's inexperience to appropriate the new child as her own. But since she would be unable to feed it, its fate would be starvation.

Catching a mother monkey with a tiny baby is ticklish

business, but the baby had to be restored to its true mother. So, with an earnest prayer to the God of things as they ought to be, the men entered the cage, drove the two mothers into their sleeping quarters, and netted each in turn.

True mother instinct was not very strong in the foster parent, for she allowed me, finally, to unclasp her hands and take the wet, dirty infant from her. Although chilled and forlorn, with a skinned area on his tiny nose, he seemed strong; and as I held him towards his rightful mother, while speaking to her in a confidence-inspiring tone, I was sure she would claim him at once. Instead she gazed upon him in terror, showed her teeth, screamed, and rushed up into the sleeping quarter out of sight. That told me that I had been elected to be nurse to the baby.

The heat in a brooder was turned on, and while the temperature was rising to the right degree I wrapped a small, round bottle filled with hot water in a soft woollen cloth and inserted it between the baby's squirming hands and feet. Normally, these would be grasping his mother's thick coat and holding his small body against her warm stomach to keep the little vital organs warm and healthy. He understood at once. Then I wrapped the baby and his bottle in cotton, stood him on end in a small box, and put the box in the brooder. At the end of eight hours I offered him a weak stimulant of syrup and warm water through a medicine dropper. He smacked his lips over its delicious warmth and sweetness, and in every way was a co-operative little monkey. But small monkeys are difficult to rear artificially and develop slowly, and I dreaded the summer ahead, full of worry and little pleasure. So I determined to make another effort to establish proper relations between mother and child. I found her, next morning, calm, hungry, clean, and forgetful of her fear. She ignored my approach (always a good sign) and so I called Charley Smith, the head keeper, to tell him I was going to give the baby to the mother. He looked at me startled, and said, 'You know you can't do that; she will kill it.'

'I am going to try anyway,' I replied.

Taking the baby from the incubator (not in the mother's view) I unwound the clinging cotton from his body. Then Charley opened the cage door quickly and, before the astonished mother had time to vanish, I deposited the baby on the floor beside her. Then I shut the door and stepped back, trembling with excitement, for actually I had flown in the face of experience by doing what I had done. The mother looked quickly at the squeaking thing, seized it upside down, opened her mouth at me in a terrifying 'face' and rushed off with it.

During the next few minutes, all was silent upstairs. The longer the silence endured, the more hopeful I became. After three or four minutes—it seemed a much longer time—the mother came down again and sat in the sunshine. She had picked the lingering shreds of cotton from the little fingers and toes and was holding her baby closely, still upside down.

Suddenly she loosened her grasp, and the smart little fellow, who knew he was upside down even if his mother did not, turned himself around, pushed his nose instead of his tail into the long hair of her breast, circled part of her body with his skinny arms, grasped himself a good handful of long grey hair, and then—finding the place for refreshment convenient and to his liking—fastened his lips to his mother's nipple for breakfast.

After an instant of amazement, the mother snuggled him into her arms, in the way of all mothers, as though he had never been out of them, and began to groom him gently with her long fingers.

Charley Smith was as happily excited as I, and understood that mixed with my triumph was an acknowledgement that I had got away with it for once. I never find myself near that cage without feeling that on that occasion I played second fiddle to the Creator.

2. I AROUSE SUSPICION

I am not always successful, however, in convincing wild mothers that my intentions are honourable. My most conspicuous failure was with Katie, our female chimpanzee.

Katie's baby was the first chimpanzee that would be born in our zoo and naturally we anticipated his arrival with some anxiety. I was the first to notice Katie's condition. Moore, her keeper, had reported to Charley Smith that Katie, formerly one of the most excitable and erratic of all female chimpanzees, always flying into rages, had become strangely docile and affectionate during the past two months. Whenever Moore went near her she held out her hands to him, coaxing to be petted and scratched. If he yielded, she was content, and when he desisted she tried to hold him. But I had not been told of Katie's new manner or I might have guessed her condition, since this gentleness in female chimpanzees prior to the birth of an infant is a common phenomenon. Both men had forgotten its significance. Now, however, she was transferred to a cage where she would be alone and the expected youngster would be safe. She showed no concern at being separated from Tim, her cagemate for six years. Of course, we had no idea when the birth would take place.

' Early on the morning of the 23rd of February 1938 when Moore went into the chimpanzee house he noticed that the food left for Katie the night before had not been tasted.

Then he noticed that Katie was in her inner sleeping room, bedded down in sweet-smelling oat hay and a couple of sacks which she had made into a deep, round nest. She lay with her back to the open bars, but as Moore drew near she turned over and held out her arms, displaying a little son proudly and telling her story with a few tender 'umph-umph-umphs'. She permitted Moore to touch the baby—this thrilled him greatly because many young wild mothers try to hide away from people and will even destroy their youngsters if disturbed—but when I entered the cage she refused even to let me see the baby.

The next day Katie ate the juice of a few oranges, a little milk and fruit, but not until the baby was two weeks old would she accept bananas, her favourite fruit. When the time came for her to emerge from her chamber for the first time she found that steps had been built below her door and that a low shelf had been installed for her use. She peered out to see if all was safe. Then, ignoring the new shelf, she climbed up to the wire to her favourite corner and there braced herself on two angle irons and held her legs tight against her abdomen to provide a snug seat for the baby.

George, the baby, had thick, long black hair and looked large for a mother so small. His face was round and delicately pink, like his hands and feet. It was encircled by long black whiskers and flanked with huge, fanlike ears. His expression, in contrast to the ancient expression of most new-born monkeys, was young, even babylike. His little pink rump was ornamented with a tassel of snow-white hair.

When this apparition was first glimpsed by its father, across the area between the two cages, Timmie's angry amazement knew no bounds. He raged, shook his cage, and beat upon the floor with his bare feet. Katie tried to give him a close-up view of the baby clinging to her breast, but instead of looking he spat a great mouthful of water upon them both, whereupon Katie turned her back to him and examined the baby minutely for injury. Then she turned once more to Tim and talked to him until he calmed down and consented to glance at little George, his rival for Katie's affections. But as he did so his brows were drawn down into a frown and his lips were pushed out in an abused pout. Then he jumped down on the floor, seized a big brass cowbell, and pushed it round and round the floor with ever-increasing speed, howling and shrieking in frustrated temper and despair. This performance went on for several days but with diminishing violence until at last he became reconciled and even interested in George's presence.

When the baby was six months old and had cut several

teeth, the family was brought together. We stood by to interfere and protect Katie if need be, but there was no need, for Tim it seems had just put on a show to bolster his claim to mastery over his family. Katie permitted him to touch the little fellow, but was prepared for any emergency. She knew that she had only to remove herself from Tim's reach to have him agree to any demand. Sometimes Tim played a little roughly with the baby, without intending real harm, and, though Katie let the baby take it, she was careful not to let Tim go too far. Tim also liked to stir the baby into a fit of temper by holding on to a foot or hand, or by pushing him a little, or by not letting him go to his mother. Katie did not object to that either. She knew that every male chimp must learn how to have a great tantrum if he expects to hold his own with his fellows and win a proper mate.

By the time George was a year old he was climbing on the wire and trapeze bars of his cage. He had all his teeth; and the skin of his little face, feet, and hands had changed from pink to coffee brown. The only lingering baby sign was the little white flag. In another year he was a free agent, running to his mother only occasionally for comfort.

During all this time, however, Katie kept George from me as much as possible. I believe she suspected me of a mother complex that none of her male keepers could possibly have. Her suspicion was correct, because I did want to get my hands on that baby before he grew much older. Not only did she resent this, but little George himself would stay out of reach. If I tempted him with food and cajolery he would venture part way down but would never come quite within my grasp. If he seemed to venture too close, Katie would call him and up he would go.

Then I went to New York for five weeks. On my return, I brought a large package of all sorts of good things for special treats. Tim was the first to see me approach the chimpanzee cage. He shrieked and rushed to the wire, begging me to run a race with him, or scratch his back, or do anything—just to let him know for sure that I had come

home. Katie, too, climbed down close to me, with her old confidence, and was so gentle and trustful that I couldn't help wondering if perhaps she was going to have another baby. I fed and petted her, and then I suddenly felt a light touch on my bare hand. It was little George trying to attract my attention. I displayed a lemon drop and he took hold of my hand to get it. Then, stuffing it into his mouth, he beamed with pleasure and swung nearer. I pushed my finger through the wire and touched his little fat belly. He liked that, too. To show me that he did, he pushed it harder than ever against the wire hoping that I would play some more. Katie paid no attention, apparently believing that George had come to the age of discretion and could take care of himself. I know I can never catch him in the open cage, but I would like to coax him into my arms under the bars of the sleeping room, to hold him just once for a moment—not to take him away as Katie once thought was my intention.

3. I MAKE AN ENEMY

One Sunday morning a substitute birdman had the misfortune to let a maroon-and-olive macaw slip out through the door of the safety cage. Mac was a very tame bird, in fact so tame and gentle that we had been unable to keep him in a large mixed group. So, after much trial and tribulation, he was housed happily with a magnificent tame hyacinthine christened 'Blue Boy'.

When Mac found himself outside the cage he did not leave the vicinity, but selected a group of small trees near by as an ideal place in which to live. Anticipating no difficulty in getting him to sit on my finger while I carried him back into the cage, I took a partially peeled banana and walked over to the tree in which he perched. Really hungry, he started very slowly to come down towards me. Then, just as he came within reaching distance of the banana and my hand, a man came up and asked 'Is the bird loose?' I nodded and motioned him away, but he was not to be put off.

'How did he get away?' he asked. 'And why don't you grab his tail?'

Of course, the bird started back up the tree and the man, concluding that nothing sensational was going to happen, departed with his questions. Sometimes, I believe that handling specimens even in the middle of the night would attract a crowd. There is always somebody who discovers anything wrong and hastens up to bother you as much as possible.

The patient coaxing of half an hour had to be repeated. It was harder the second time because more people had arrived. However, after an interval, Mac came down part way and was nearly within my grasp when an excited mother came running down the hill, crying to her children, 'Oh, come see the pretty bird loose in the tree! Come see the lady catch the bird!'

Of course, he was frightened off again, this time moving to another tree.

I told the lady, as calmly as I could, to take the children to some other part of the grounds as the bird was very fierce and might attack them.

By now Mac realized that I was trying to work him slowly towards his cage where his excited friend, Blue Boy, was calling him back. Nevertheless, he responded to my coaxing and I reached for him a third time, too eagerly—away he went again.

I sat down to cool off, watching him as I did so. He began to sample leaves and twigs and to take more interest in me. I was sure he would come down and permit me to catch him if I could just keep him from being driven into flying high and tasting real freedom. His wings were in perfect condition.

Eventually I went over to him and began to coax once more. At last patience was rewarded. He started down quite promptly, but, when a few feet above my head, he went out on a small limb. Instead of dropping to the limb below he continued on to the very end and it swayed down with him. This unexpected behaviour frightened him. He began to retrace his steps, but seesawed so wildly that his long tail

feathers swung within my reach. I clutched them and he dropped to the ground at my feet. He started running for the cage and I ran, too, still hanging on to his tail. It was either keep up or let go unless I wanted to pull out his gorgeous feathers. On reaching the cage, I swung open the door and he clambered in, screeching as only a macaw can screech.

I have never gone by that cage without stopping to offer the birds a nice smooth stone to carry in their great beaks. They love to rub these stones and to try to break them, dropping them from the top of the cage to the ground and retrieving them again and again. The first time after the capture, Mac refused to come down. No matter how much I coaxed he just contracted the pupils of his eyes and glared balefully. The next time he came readily, but when I tendered the stone he made a vicious lunge and tried to grab my fingers through the wire. He has never accepted a stone from me since and has never forgotten his humiliation. If I fail to offer him a stone he tries to grab my hand. Unwittingly, I lost a good friend who is still gentle and kindly towards everyone else in the zoo.

4. TAKING SIDES

Recently, while perusing the morning mail, I came upon a note attached to a price quotation on a tame llama which read, '*Guaranteed not to spit.*' I had to smile. It reminded me of the lesson that taught me never to interfere with the private lives within the cages.

For some time we had had only two llamas, father and son. Then an old, but fine-looking, female was received. We put her into a partly empty camel pen and the two males were moved in with her. Late that afternoon, while walking around the grounds with the President of the Zoological Society and some visitors, I heard a strange, rumbling noise coming from a queer direction for that kind of sound. I remarked to Dr. Harry that something was wrong at the camel pen. He said that I imagined it. When I insisted it was not imagination,

he drove me to the north end of the park where the camels and llamas were housed. The lady llama was in a corner chewing her cud peacefully with her eyes closed. The two males were vying in open combat for her favour. They were down on their knees, pushing each other with all their might, each trying to win the advantage by getting his neck over the head of the other—whether to bite or smother I could not determine. As we stood there, the younger llama, very much winded and truly fighting for his right to exist in the llama group, rose to his knees and finally staggered to his feet. The old one followed and attempted to get him down again.

I seized a long pole and ran towards the fence. When the llamas saw me they started—as though at a military command—towards their common enemy. Their mouths were drooling long streams of green saliva and the juices of alfalfa. With heads high, legs far apart, they stopped just against the cables of the wall. Then, in unison, they spat or blew the entire stinking, wet, slimy contents of their gullets as well as of their mouths, straight at me. My rout was complete. Red-faced, dirty, and vile-smelling, I wiped away what muck I could and returned to the car where Dr. Harry was laughing uproariously. But he did not refer to the affair again until a year had passed. Then, when another llama was to be introduced, he remarked to the keeper, with a sly smile, 'If you are putting her in with the males you'd better take Mrs. Benchley along. She knows how to stop a fight.'

5. SO LIKE OURSELVES

Occasionally I have to work with the cameramen who come from Hollywood with ideas for using the zoo animals, not for purposes of publicity but perhaps for scientific or educational films. One day they became interested in ascertaining the reactions of certain of the higher apes and monkeys to their own reflections in mirrors. I suggested that we try Goola first. She is a friendly, clever, little orang-outang whose Malayan name means 'Sugar'.

We stood a mirror large enough to show her full length on the ground in front of her and supported it with our hands. She looked shyly at a black face surrounded by a ragged fringe of long red hair and never dreamed it was herself. She greatly admired the apparition. Leaning forward and obtruding her flexible lips as far as she could, she kissed the creature upon the mouth. The response was apparently all she desired and so she touched the face with her finger and seemed amazed that it should have put its finger up at the same time. This was not as thrilling, however, as lip-touching. So she pressed her lips to the glass again.

She seemed now to realize that the creature must be reached behind the windowpane. When we appeared not to be watching, she slipped her hand slyly behind the frame and made a quick grab. She did this again and again until, convinced that her new pal was playing hide-and-seek, she stood suddenly upon her feet and pulled the mirror out of her keeper's hand. She looked quickly behind it to catch a glimpse of whoever was there before she could disappear. Her obvious disappointment left no doubt as to her affection for the illusive image.

We repeated the experiment with a small Celebes macaque and a gibbon. All admired their reflections greatly, were attracted to their own kind and tried to touch the image by reaching behind the glass. But when we held the mirror before Katie, the chimpanzee, and her little son, she looked upon what she saw as most distasteful. Showing a flash of her old temper for the first time since Georgie's birth, she turned, and, with an effort to conceal the small fellow within her arms, fled to the top of the cage and would not come down again.

The reactions of these apes and monkeys to the mirror was so childlike that it set me thinking of the many human qualities I see constantly reflected in the activities and characters within the cages at the zoo. In almost every cage I have seen someone I knew, my friends, family, and to be honest, creatures very like myself. Jealousy and tenderness

are there, sophistry and cunning, dignity and courage, honesty and avarice, curiosity and cleanliness, and a sense of humour that includes almost every form of joking.

If cleanliness is next to godliness then, by all accounts, the humble raccoon is one of the most spiritual of creatures. He washes his food over and over again before he will eat it. Raccoons, however, are not the only creatures that wash their food. Several members of the monkey tribe at feeding time always run immediately to the drinking fountain and dip their food. The gorillas will not eat the outside of stalks of celery or the outer leaves of lettuce or even the rind of water-melon until they have dipped them time after time into the pool. They peel everything they eat, wash much of it, and, if it has fallen into the sand, they immediately scrape off the soil or eat from the clean side down close to the sand. They pick up tiny particles of food between their fingers, but if they are gritty or sandy they never consume them. The gorilla is the most fastidious of all the great apes both in eating habits and in contact with food and filth. All animals have a great desire to be clean and are able to accomplish this, in the wild, by walking away from refuse, leaving it for nature to destroy in her own perfect way.

Human characteristics as reflected in wild animals hardly need recounting, for they are apparent to every close observer; but a most remarkable case of memorizing serves as an example of the fact that all the virtues are not confined to Homo sapiens. This bit of 'human' memory was exhibited by a California sea lion.

In selecting seals for training our trainers use a great deal of study. They desire seals that are attentive and alert but not nervous and timid and their selection is based, first, upon the shape of the head and nose. A long slender head with a pointed nose is always the choice. If the seal keeps darting his head in every direction instead of keeping his eyes turned towards the trainer, he is discarded as nervous and flighty. If the eyes follow the trainer's hands and the movements of his body, he is an apt seal, being attentive and alert.

to have a little sport. Realizing that this was not fair to a seal of Jerry's capability, Captain Hancock finally brought him back to us so that he might continue his education.

During Jerry's absence the group of eight seals had added many tricks to their routine. Seals are trained at first singly and appear for practice in a regular order every day. When Jerry left us he was second in the training routine, the first being Sonny Boy, a very young seal who was always impatient to start and was pampered because he was such a baby. Captain Hancock told me that Jerry had forgotten most of his repertoire for lack of practice, and that he had become rather impudent in refusing to do tricks because of lack of real discipline.

Jerry was heartily welcomed by his old pals. The trainer, 'Captain Charles', opened the door leading from the holding quarters to the training room and Sonny Boy slipped out. He went through his programme and practised some new stunts. After being suitably rewarded with chunks of fish he was sent back through another door. When the keeper opened the exit door for the second performer, trouble began. Instead of Charley, who had become number two sea lion in Jerry's absence, there was Jerry with his nose right against the door. Charley was trying to force his way past Jerry through the door but he didn't have a chance. Jerry stood on his rights, snapping, biting, and barking in an ugly tone. Captain Charles could do only one thing: call Jerry second, and Charley third.

Jerry flapped triumphantly and joyously to the pedestal. Balancing himself nicely on the edge, he clapped his flippers together noisily and then, his head on one side, looked to his teacher for praise and reward. Trick by trick, he went through the whole programme just as he had before he left us, a year before. His performance lacked the smooth polish that had characterized it before his vacation, but he was ready and waiting even for the little 'song' that was always his finale.

Captain Charles told Jerry that he might have his old place

back in the routine permanently. He had earned that right by his remarkable memory.

6. BY DAY AND NIGHT

Many occurrences are in the nature of emergencies that cannot be foretold or controlled. As such events usually develop at most unexpected hours, we have come to expect calls night or day. One of the catastrophes from which we should feel entirely safe in San Diego is a flood, and yet one year it rained so continuously for several weeks that our hillsides became saturated with water and we did have a real flood. Then, suddenly, as though that were not enough, a cloudburst fell upon us and our steep canyons poured millions of gallons of water into the gutters and drain pipes under the moats. Fences enclosing the seal grottoes and pools were washed away and through one of the canyons went twenty-six seals in a body.

Down they sailed—right into the streets of San Diego. Two swam into the offices of the *San Diego Daily Sun*, others entered stores, garages, and front porches, and a few, apparently taking advantage of the civilization to which they had become educated, went right down the street to the police station and walked in. That morning was a nightmare. Every few minutes the 'phone rang and, when I answered, someone would ask, 'Have any seals escaped from the zoo? If so, we have one on our front porch.' But when the police department called to tell me that their station had been invaded by five seals it was almost too much for any bookkeeper to cope with.

On another occasion, while I was watching an evening motion-picture show in the city, a call for Mrs. Benchley was flashed on the screen. I rushed out to the box office, called the number, which was that of the police department, and learned that a seal had apparently escaped from the zoo for one had appeared at a house on Ninth Street occupied by two unmarried sisters. They had heard a tapping on their door

and had gone to open it. When they did, in walked a seal. For a moment the ladies did not know what to do with such a strange but apparently friendly visitor. Thinking that their bathtub might be the solution they led the way into the bathroom; the seal, dominated by curiosity, followed. When they had filled the tub with water, he climbed in and they rushed out, shutting the door behind them. After that they 'phoned the police and the police called me.

I went down to the station, identified the seal, arranged for a suitable reward to the ladies for his capture, and returned the seal to the pool which was very large, with sloping sides, and was surrounded by a six-foot fence. Several hours later —at three o'clock in the morning—the police again sought me. I was home asleep. They wished to report that a man, crossing Cabrillo Bridge, had seen a seal flopping along ahead of his car. Being absolutely sure he was sober, he had 'phoned the police. I got up and dressed, drove to the zoo and down a black canyon heavily grown with cypress trees until I came to the pitch-dark home of our truck driver. I called him out, and, together, we searched for the seal until daylight. Then we gave up. I went home, undressed, and turned in once more, but not for long. Someone living in a very distant section of town telephoned to say he had lassoed a seal and had her tied up in his yard.

It was the same seal—dusty and tired, but not discouraged.

We could not keep that seal anywhere. She could have climbed over a twenty-foot fence. Eventually we moved her into a pen in the hospital, to get her on feed, and then shipped her out with a bunch of seals to join the circus, where her home, a great cage, was not only surrounded, but covered, by wire.

7. 'ZOO LADY'

The name 'Zoo Lady' is almost universal in the language of San Diego children and not infrequently, as I walk along the city streets, I hear some shy little fellow exclaim, 'Mama, there goes the Zoo Lady.' Not long ago the daughter of a

friend, after seeing a news reel about the zoo, ran breathlessly into her house, calling, 'Oh, Mother, I just saw my dear, very dear friend, the Zoo Lady, in the movies. I didn't know she was a movie star!'

Well, hardly a star.

Daily I see dozens of small boys and girls running around with their hands filled with cast-off snakeskins and a nondescript assortment of feathers that are being taken home for their private museums. At times, hat-bands are literally filled with feathers, set in at all angles—not for adornment but because that is such an easy place to keep feathers without spoiling them. Some boys use discarded peanut bags or cracker-jack boxes as feather containers.

Now and then I have a share in the joy of collecting which makes me very grateful. Late one afternoon, as I sat at my office desk, I happened to glance out of my window and saw what was probably the last visitor leaving the grounds. He was a small lad on his way to the gate. His feet were heavy with fatigue, his socks were wrinkled down around the tops of his shoes, and his shoe-strings were untied. He had apparently started out from home clean and tidy, but his face was dirty, and clutched in each grimy fist was a bunch of feathers of assorted sizes, colour, and kind.

Seeing me, he came to the door and, selecting a feather or two from the lot, asked me what kind of birds they came from.

'You see,' he explained, 'I am getting a collection of feathers.'

I looked at him with a mixture of awe and pity. Only with the courage of childhood could one hope to make a collection of feathers. When I thought of the staggering task of collecting eggs and birds, and multiplied each bird by the number of its feathers, I felt lightheaded. But I have a secret understanding of the love for feathers which I share with children and primitive people largely, and now and then I see a man or woman sheepishly carrying out a feather. So we sat down and looked over the feathers; and I told him about the birds

that had shed them, and one or two names I wrote down on small pieces of paper and clipped to the feathers. I also showed him pictures of several of the birds he did not know.

His serious attention and interest then prompted me to do something that I am sorry I cannot do for every child who goes out of the gate with a handful of feathers. I went to my own secret store of rare and beautiful feathers and selected a few choice ones. I put these together with his own bunch in an empty candy box. He could scarcely believe that I was really giving him my beautiful feathers, for he knew as well as I that feather collecting represented a real effort.

Several days later he brought back a few pages out of his feather book to show me. I felt well repaid for the little time and effort I had given him, for the names of the birds were neatly printed, the feathers carefully mounted. The lad had been busy and happy and had learned something, too. He was buying all the material he could about birds, earning and saving his money to do it. After seeing his 'collection' I cannot keep from speculating upon each bunch of feathers (clutched in warm, damp fists) I see going past my window out the zoo gate.

PART 3

Famous Zoo Characters

CHAPTER IX

Jiggs

It takes all sorts of animals to make a zoo and the characters of animals are as many and varied as those of men. I have mixed feelings about animals. Sometimes I feel that we miss the most in not paying more attention to the common little creatures; but again, when I discover something of the nobility of a great anthropoid which a smaller creature seems to lack entirely, I feel as though the divine spark claimed by man alone just misses being present in some of the manlike creatures.

Of all these, the greatest was Jiggs.

Jiggs was an old female orang-outang, once a famous actress in the motion-picture world. She came to us in a queer deal involving herself, a male dromedary, and some small monkeys. The name orang-outang, meaning 'man of the woods', was particularly apt in her case. Orangs are naturally adept in the use of tools and are exceedingly clever at taking things apart. A stick in their hands immediately becomes a lever; a wire is bent into a hook. And Jiggs was a leader of her race.

Her former owner said that he desired to trade her because of her great weight, which made her too awkward for use in pictures, but his truck driver told us privately to watch out because she was a 'killer' who had to be kept manacled to a steel pole because of her ability to escape from any cage. This was bad news, but we were glad to be warned so that we could be doubly sure everything was ready before releasing her. We unlocked her chains before we turned her cage to

the open door of our cage, which was strongly lashed and braced against any effort she might make to escape. Then we opened her door.

Jiggs peered out and her sullen, slanting eyes took in the inviting room, twenty feet square, with a bed of clean straw in the corner, a meal of fresh fruit, and water dripping coolly into a drinking fountain. We were sure that she was thirsty from the heat and the excitement of her trip by truck to the zoo in San Diego. I was coaxing her to come out, not scolding but speaking to her gently by name, when one of the men, a little impatient, struck the back of her box. Her keeper stopped this immediately and sent everyone away but ourselves. We stood side by side talking to one another, now and then speaking to Jiggs.

Finally, Jiggs, as though she had concluded we were not very much concerned whether she came out or not, began to emerge. Step by step, so slowly that you could not believe she was moving at all, she slid out of the crate into the big room. Her huge, grotesque body could not be supported entirely by her short, comparatively weak legs, and so she moved forward by using her long heavy arms like crutches and swinging her legs between them, balancing until she moved both arms forward again. Her long fingers were doubled up so that her knuckles, hard and scaly, came in contact with the floor. She bore her weight on these. Her eyes were almost shut and her lips were drawn together in a determined line. She glanced from left to right and eventually swung her way close to the side of the cage where we were standing outside the fence. She raised her head, then, and stared straight at us with a hatred that embraced all mankind —the most malevolent gleam I have ever encountered. Henry and I looked at each other, wondering what we had acquired. An ape gone bad was a new experience.

She spent her first night in the open cage and in the morning we discovered, as expected, that she had been busy with the tricks she was reputed to have. Several deep scratches and cuts had been dug into the walls of her cage during the

night. We wondered what her tool had been and, particularly, where she had obtained it. The walls were of hollow tile covered with the hardest kind of stucco. Much of the day I stood observing my new charge, trying in various ways to get her to single me out from the crowd of casual zoo visitors. I watched, also, while Henry opened the door and put in her food. He did not open it quickly and toss it in as he sometimes did with baboons and vicious leopards, but told me to give him a signal when she was away from the door. Then he opened it slightly, spoke to her by name, stepped inside, carefully set the pan on the floor, and came out again.

Of all the anthropoid apes the orang-outang is the least greedy and the most dainty in eating habits. For some time Jiggs appeared indifferent to the food, but finally raised herself on her great arms and swung over to inspect it. First, however, she looked at the door, suspecting a trap and trusting no-one. Apparently convinced that the door was tightly closed, she reached into the pan and fastidiously selected a banana. Suddenly she discovered the pile of rice. Lifting a huge mass of it to her mouth with her fingers, she tasted long of its flavour, turning it over and over in her mouth before swallowing it. Then, bit by bit, she allowed it to slip down her throat. After the first choice morsel she returned to her station farthest from the door and cleaned her fingers. I asked Henry to give her a big spoon, and he did. Never again did we compel Jiggs to eat with her fingers. As though seeing me for the first time, she now began to study me.

Perhaps it was my signal to Henry, I shall never be sure, but from that day Jiggs seemed to connect me with the change for the better in her life and to look upon me with a little less hatred. From hating, her gaze became indifferent, and finally tolerant. At times she would forget her distrust of man and looked forward to Henry's coming with almost the degree of eagerness displayed by Maggie, the three-year-old orang that Henry had raised from babyhood.

The first time Henry had to change Jiggs's bedding, the head keeper went in with him, carrying a heavy club, and a

second man waited in front of the cage with a two-inch hose ready to turn in a heavy stream if need arose. The precautions were unnecessary. Jiggs slipped quickly into a far corner and stood immobile, albeit watchful and defiant, until the work was finished.

But day after day, no matter how hard we tried, we could not discover the instrument which she employed to dig into the heavy cement. Even during daylight hours new digging was done, and we were baffled. She had found out the type of construction, too, for she was concentrating upon the plaster with which the hollow tiles were held together. We were fortunate in one particular: there was no system in her digging. Seldom would she continue where she had dug the previous time, which minimized her chance of digging out.

One day, while I was trying my best to make friends with her, Henry came by. Vaulting over the guard fence, he put his hand against the heavy wire and spoke to her as was his custom with chimpanzees and other monkeys. Jiggs apparently had made up her mind that he was a friend, someone to be tolerated at least. Perhaps her indifference had already turned to affection, for she came slowly towards him. He grunted rather than spoke her name. I feared that his tone was too gruff, but Jiggs understood it. As she neared the wire I kept very still. There was a long pause during which I felt all three of us were holding our breath. Then Jiggs put her lips against the back of his hand in a gesture of both confidence and surrender that brought tears to my eyes.

Within a few weeks Henry ventured to enter the cage to clean when I alone was present. Jiggs stayed away from him, permitting him to move her bed of straw and to do what he wished. Her change had been so gradual that it was by almost imperceptible degrees that we won her friendship, one by one.

When she had been with us several weeks I happened to glance at the top of the cage and noticed that the wire was loose. Closer inspection revealed that several of the heavy tie wires that held the chain link to the frame had been un-

wound. The mystery was solved. These are always left so that the twisted ends, bent over by heavy pliers, are on the outside, but after all was quiet in the zoo Jiggs had been steadily undoing the tie wires for 'scratchers'. We hastily repaired the damage and then I began really to try to catch her at work. Not a wire, however, could Henry find—either in the cage or in the drains. She was too sly and far too smart to work before our eyes. But sneaking back one night, after she thought I had gone, I came upon her at work and watched her. Her wisdom as an engineer was amazing. She would tap the wall until she found the union between two tiles and there she would start to dig, scratching straight down or crosswise, in whichever direction suited her fancy. When she saw that she was discovered she desisted work and moved around casually to throw me off. Then, after a few minutes, she slyly poked the wire into the straw pile that was her bed. No better place of concealment could she have found. The straw was always raked up and thrown into the truck in masses and so the wires had never come to light.

The next morning, feeling somewhat like a traitor, I told Henry where to look for wires. When she was not watching he raked the straw out and examined it, finding four wires. Bolder and bolder she grew and once actually had a complete square dug out, ready for her escape. The joke was on her that time, however, for it would have let her into the cage of a pair of fierce baboons, who would have given her a stiff fight and, perhaps, fearful punishment. But she discovered her error in time and left the square only partly removed, or, if she had removed it fully, she replaced the filling.

Her very boldness, however, was her undoing. Every time Henry caught her digging he shouted at her and she would stop temporarily. One day he told me he was going to go in, take the wire and show it to her, and either scold or threaten her with punishment. By this time she was walking along by his side, holding his hand, and allowing him to enter the cage at will.

When she saw him disappear on his way to enter she hur-

riedly hid the wire in one corner of the straw-littered cage. I directed him to the spot and he found the wire. With the evidence in one hand and a heavy, short whip of leather in the other, he started towards her.

'Jiggs,' he said in a rough voice, 'see this wire?'

He raised the whip—not to strike but shaking it fiercely. She sat like a stone until he drew very near. I was frightened, for I dreaded what the show of the whip might do to her friendly spirit. But instead of resenting the authority, she recognized and apparently respected it. Coming towards him she reached out and took the hand that held the whip. She pulled it humbly to her lips and then looked up at him with all the ingratiating pleasantness of a naughty, crafty child of four or five. Henry was helpless. He could not find another cross word for her. Completely disarmed, he looked at me with a sheepish grin and said, 'Well, that'll teach her, I guess.' The strangest part of all is that it did. We had little more trouble with Jiggs in that particular way.

Not long after this, we moved Maggie, the young orang-outang, into the cage with Jiggs. This was a rather amiable arrangement, for Jiggs bullied her a little, tolerated her a deal, and humoured and really adored her greatly.

Maggie had been taught many informal tricks, and every day, when she had her bowl of rice, she was fed at a table and then compelled to show off all her tricks to an admiring audience. Henry immediately included Jiggs in the little act, not compelling her at first, but gradually increasing her repertoire until, together, the two orangs put on an excellent show. Jiggs did it because of her adoration of Henry and because she was fond of food. She liked, also, to smoke his pipe, which he actually shared with her.

She was a natural-born clown, often adding little unexpected features to her performance, greatly to Henry's surprise. For instance, one day she reached for his cap and put it on her own small bullet head, getting a big laugh. Later she added his dark glasses. She loved an audience, really, once she realized that human beings were her friends. Inves-

Photograph by MacCafferty and Adams

Maggie and Jiggs

Photograph by Cy Perkins

Primo, the baby gibbon, when one day old, clinging to

tigation of her past convinced me that she had been cruelly treated and had turned against man with just cause. Her rapid response to Henry's kindness was one of the greatest lessons in humanity I have ever had. Jiggs was lazy, however, and hated to do some of her stunts, especially somersaults and walking with her hands off the ground. Henry was always her master, however, and she never refused to obey, although she never stopped trying to get her own way. Neither was there any resentment or fear between them.

Almost every anthropoid in the zoo has displayed some power of reasoning, but the most outstanding ability was shown by Jiggs. Although she knew it was forbidden visitors to feed the animals, she was very sly about attracting their attention and inducing them to break the rule. She would hold a feather or a leaf—she hoarded all the feathers and leaves that dropped or blew into her cage—close to the bottom of the wire and begin waving it slightly back and forth until someone with a bag of peanuts or popcorn took notice. Then she would toss it in his direction and human nature could not resist reciprocating. And how often have I myself made her purchase a fig or prune with several leaves or a feather! She would hunt around in the cracks or between the roots of her favourite tree stump until she found a choice offering, which she would poke through the wire towards me with pride and satisfaction. If the tossed feather fell short of its mark, she would stand against the cement base of her cage and fish by the hour with her fingers, or with a bit of twine unravelled from her bedding sacks or with a straw. She would throw the ravelling or the straw beyond the feather, or leaf, and then drag it back so slowly that it touched and clung to everything in its vicinity.

The cleverest bit of fishing I ever saw her do was when she noticed, just beyond her reach, a piece of brightly coloured paper. She watched it until at last she gave up all hope of its blowing towards her. Going to her straw pile, she selected a long, straight, and rather large straw and poked it

through the fence. It was too short. By moving over to the next mesh, she came a little nearer but still the straw was too short. She clasped it tightly between the very tips of her first and second fingers and reached them through to their greatest extent. She touched the paper ever so lightly, but even that was too much—the paper slipped just beyond her reach.

She studied the prize and her implement. Then she lumbered to her bed, chose several straws and brought them to the front of the cage where, first, she carefully estimated the position of the paper and then inspected her tackle. She actually held two straws up, one in each hand, and compared them. They were approximately identical in length but the end of one was slightly curved. Preferring this, she slipped it through the wire—held tightly between long forefinger and tiny thumb—and passed it over the paper time after time, more than once pausing to curve the hook a little more. Finally, she moved the paper slightly towards her, but not near enough. So she put the end of the straw in her mouth and moistened it. Wetting the straw worked. Slowly, inch by inch, she edged the pretty paper towards her, pausing several times to remoisten the straw, until she was able to pick it up in her fingers.

One day Henry was taken ill and within three days passed away. Jiggs had always been a little bit of a problem if Henry was gone for long on a vacation, for never, in the seven years of her stay, did she really concede the authority of anyone else. His one day off a week she accepted as an unavoidable evil, but more than one day was a calamity. She was somewhat distraught during Henry's illness and, as we were too, little was done to comfort her.

The act was stopped, possibly for good, but its fame had travelled far and wide. We could not reach everybody with notices or by posting signs.

I had been staying away from the monkey mesa, for, like the apes, I was finding Henry's absence hard to bear. But visitors demanded my attention and on the second Sunday

following Henry's death I was forced to walk past that cage. Suddenly, because of the crowd of people waiting at the guard rail, I realized that it was two o'clock and time for the acts. I pushed my way through the crowd to announce there would be no performance.

Jiggs was sitting there with her black oriental face pressed hard against the wire and staring sadly into the crowd. She looked into my eyes, as though she sensed that I, too, was in trouble. Suddenly she turned and, with that gallantry that is the tradition behind the footlights, went mechanically through every part of her performance that she could without Henry's help—even acts she hated most, including chinning her great weight to the swing bar ten times.

Henry had always let her stop at that point if she had done well. To-day, she looked over at me for approval or a treat, and then dropped down, in a dejected huddle, on the floor of her cage. She waited there an instant, seeming to gather a little courage, and came to the wire to receive the applause which was her due. I found it impossible to explain to the visitors what they had seen and turned silently away. Jiggs had done her part better than I could do mine for she had gone on with the show regardless of her grief.

My association with most animals has been so happy that it seems strange that all of my contacts with Jiggs must leave me sad. After Henry's death she accepted me, not in his place, but as her best friend. I tried my best to deserve her confidence, little realizing to what unhappy event it would finally lead.

We had been trying for years to obtain a male orang-outang, without success. Finally the opportunity presented itself to exchange one of our females for a young male. This was too good an opportunity to lose. We considered very carefully; Maggie was young, her life was before her; we had raised her from a very young baby and knew her life history. Jiggs was just in her prime but had never been so satisfactory since her beloved keeper had gone. We decided, with real sorrow, that Jiggs should be the one to go.

As shipping time drew near we prepared carefully for her comfort on the trip; a suitable crate was built and braced against her tremendous strength and cunning. The morning she was to leave I told the men I would not be around. A new primate-keeper, who had not had time to develop any real attachment for the animal, was not loath to see her go and acted as master of ceremonies for her departure.

The preparations to crate her having been completed, the door of Jiggs's cage, which opened right into the crate, was slid open. Jiggs had already handed her bedding out through the bars to her keeper, as was her custom, but the hammering and other noise in the cage, while her door was closed, had excited her suspicion. Instead of moving directly out, as was hoped, she put her head out and, seeing heavy bars at the distant end of the crate, moved back. She was cajoled and coaxed; she was tried with threats and food; she was left alone in the hope that she would come out and attempt to break the crate loose from her sleeping quarters. Only one man sat motionless ready to drop the door if she emerged. But Jiggs's oriental nature stood her in good stead; she could play the waiting game far longer than human patience could endure. A glance from her small eyes from time to time to see what was taking place was her only movement. The old sullen look had come back; she was again the outcast we had reformed with long and patient kindness.

Finally, in despair, the men sent for me. Reluctantly, I entered the big out-of-door cage and, looking through the bars, called to Jiggs. Without hesitation—head well in advance of her heavy body—she came out. The door dropped with a heavy thud behind her. Startled, she turned and glanced behind. Only one glance was needed; she knew what had happened. Then she looked at me. Her eyes were not mean but wise with the wisdom of ages. If she had been angry it would not have been so hard, but there was nothing vindictive in her expression, only reproach, and I knew she felt that I had betrayed her. She turned away from my offer of fruit.

I didn't blame her, but I knew, as she could not, that she was going to a place where she would be treated with as much kindness as we could give her, where her life would soon be as happy and contented as it had been with us, and my reason told me that she would forget much sooner than I.

CHAPTER X

The Flying Grey Ghost

If you were to stand near the cage of gibbons some Sunday morning, hoping to hear their strange morning song, you would be disappointed if that happened to be the day the Grey Ghost walks, or rather flies. Instead of hearing the song you would be startled to see a square gunny sack rise suddenly from the floor and walk quickly to one of the upright poles of the great trapeze which fills the top of the cage. One long black arm would shoot out of a hole in the corner of the sack, and then another, and the Grey Ghost would be off on a wild swing across ten-foot paces, whirling madly around a pole from top to bottom, and running across the floor until eventually all the little gibbons would be playing tag with her. Wild children in cages play with all the joy and abandon of human children, and animals love to scare each other in play.

Each of the little gibbons will tag the Grey Ghost and be off in a flash, darting in one direction after another while she gives them chase. Her sense of direction is uncanny. She never misses a rod and keeps straight after whatever playmate she is pursuing. We have never completely solved the mystery of how she guides herself so accurately.

The 'grey-ghost' game started accidentally. Moore, the primate-keeper, gave all the gibbons some sacks for bedding. When Blackie, a young black Siamang, found that one end of her sack was open, she crawled into it, curled up, and held the top tightly shut with both hands. Then she hopped out of her sleeping room and ran across the floor, and round and

round the cage. The other little fellows scurried away in real alarm, but Blackie is a mischievous teaser, and did not desist; she rushed after first one and then another until all were chattering and whimpering. Then she climbed to the top of the cage after them, but, alas, there she had to release her hold and the sack fell away, revealing her identity. But she was undaunted. Gathering up the sack she turned it around experimentally until her head was in a corner and one hand was free to swing or climb.

Moore decided to improve the situation. He cut a small hole in each of the corners of another sack, called the impudent Blackie to him and gave her the new suit. Sticking her long arms through the holes, she walked out into the centre of the cage, and was off, swinging madly from bar to bar, forty feet, the length of the cage, and back.

So the Grey Ghost was born. Now she has sacks of many materials, some trimmed gaudily with ruffles of bright colours. How she loves the gay outfits! She carries or drags them with her wherever she goes, or hides them in her sleeping room when not wearing them. If another gibbon tries to find or steal them she drives him fiercely away.

Sometimes she comes close to the wire and tempts the visitor to grab the sack. She pushes a small corner between the chain links and, if the bait is accepted, she struggles with all her might to retrieve it. When, eventually, it is gradually surrendered, she is delighted. She has bested her opponent in a tug-of-war. Occasionally she drops her sack carelessly near the wire and walks off, pretending to forget it. But one move of a hand in its direction and the sack is swished out of reach. She is off with it, careering along the bars at the top of the cage. Without pausing, she runs her arms through the crude armholes and so becomes, again, our Flying Grey Ghost.

Her favourite companion is Negus, a magnificent grey-cheeked gibbon found only in Siam. She was given to us by a family whose pet she had been since her purchase by them in Siam while she was still a baby. Unfortunately she actively hated ladies and when she bit two lady friends of the owners

they decided she belonged in a zoo. One day a son of the family and his mother came to see me. They were sure that the gibbon would be happy in our cage. I was not so confident, for it is difficult to introduce a pet to wild animals. Negus was brought down by the son the following week and when I observed the affection between the ape and her young master I almost hoped he would not leave her. I wanted the gibbon terribly. She was lovely and a new species. He played with her on the lawn for a long time, tossing and throwing and swinging her in his arms, sad to part with her and unhappy that she must pine for him when he left. Finally, we took her over to quarantine and he bade her good-bye. She was very unhappy in a little crate the first day, but after we moved her into a big cage with swings and shelves she rallied. The doctor and the hospital assistant entered the cage at least once a day to play with her in her master's rough-and-tumble style. This made the shift from pet to exhibit less acute.

After a few days we took her inside the fence near the gibbon cage. Poor creature, she never dreamed she looked like that. She thought she was some sort of person. When she saw the gibbons she climbed to the top of the keeper's shoulders and screamed with fear. She even held out her arms, imploring me to save her from those beasts. This was what I had anticipated and so we took her away to an empty cage near the spider monkeys, where she could get used to her own kind gradually while having plenty of contact with visitors. For two or three weeks she stayed in this arched cage, climbing a dead tree stump, swinging, and getting acquainted with all of us, watching and scolding the spider monkeys across her alley, and generally being acclimatized and trained for her future life.

One afternoon, when I felt she was in the proper frame of mind, I asked her keeper, to whom she was already much attached, to bring her along to the gibbon cage. By now she had learned to climb on wire, and so, when she was taken within the rail, up the side of the big cage she went. All the

gibbons, including the Flying Grey Ghost who happened to be out of her sack at the time, rushed over to greet the new arrival.

'Ha, ha,' she seemed to say, reaching out to touch them, 'you cannot scare me now. I know you are spider monkeys.' They smelled and touched each other lightly. Suddenly she raised her hand and gave Blackie a playful push. Blackie pushed right back.

'That is pretty good,' decided Negus, and tried to get the end of her leash out of our hands.

Next morning we put her in with the gibbons, and when I passed she was on the highest shelf making friends with Blackie. Four little grey gibbons were crowding in upon them, also wishing to get acquainted. But she and the Flying Grey Ghost were too engrossed with their own inspection and affection to brook interference. Suddenly there was a squeal and a flurry. The Ghost had become too familiar and Negus had put her in her place. Blackie came back and thought she would push Negus around, but she hadn't a chance. Negus knew too much about pushing for she had been brought up with a rough playmate.

She does not give all her time to Blackie or chum with any special gibbon. So none is jealous. If she ever thinks of her lost master she does not show it. He will be both glad and sad when he sees her, for it is only natural to hope a pet will remember and continue to love you. But animal nature, like human nature, is so wonderfully constituted as to make it difficult to keep sorrow alive. Moreover, the Flying Grey Ghost keeps her so busy she hasn't much time to remember.

CHAPTER XI

Our Elephants

Perhaps none of the many innocent beasts has been more cruelly slandered or falsely glorified than the elephant. To the elephant has been given the power of memory far exceeding the span of human life, the faculty of hating beyond the conception of human mind, and the tradition of a common dying and burial ground used through the ages and visited by countless human beings, but never by an authentic scientist.

I have talked with 'bull men' from the circus, keepers of zoos, trainers of elephant herds, persons who have worked elephants in the Orient, and men like Edmund Heller and Martin Johnson, who have followed and observed, carefully and intelligently, the elephants on the plains of Africa, and I have come to the conclusion that elephants differ as much individually as do other animals, and that none of the characteristics known as 'elephant traits' can be attributed to every elephant.

Our largest elephant is Empress, an Indian elephant broken to work by a lumber company in Bombay. She came to us in 1923 in a shipment from Frank Buck. Her head is so broad, her forehead so full and round, that she is often mistaken for a bull elephant. There is no humped-back, sloping-shouldered insignificance about 'Old Emp'. She stands ten feet at her shoulders and weighs nearly six thousand pounds. She is as playful and skittish at times as a colt and has always led her mates in mischief.

I had been at the zoo several years before I could be con-

vinced that elephants would not step on me at the first opportunity. The sight of nearsighted Empress stepping carefully around a flock of ten baby guinea chickens, trumpeting wildly to the silly old mother to take her babies out of danger, was the final convincing argument. After that I frequently entered the elephant stockade, very proud of my familiarity, until, one day, Empress put me in my place by an attack upon my dignity.

Having important guests from out of town, I had given orders for the elephants to be turned into their bath early, but when I arrived, at the appointed time, I was disappointed to find that the order had miscarried, and that the elephants had not yet been turned into the big pool. I entered the enclosure to turn them into the pool myself and unlocked the padlock of the gate between the two parts of the stockade before realizing that a cart containing rakes and shovels, garden hose and pitchforks, was still in the enclosure. I hurriedly tried to move it out of the pen before the elephants came in, but in vain. Empress, the official gate-opener, swung wide the gate and, disregarding my shouted order of 'Back, Empie!' held it open while the others trailed through.

Deciding that I needed help, the smallest and youngest elephant began to unload the cart as I endeavoured to push it away. The older elephants began to assist her. I tried to pick up the hose but Empress, feigning absent-mindedness, put her foot on it. When, finally, I ceased struggling to remove the cart, all the elephants lost interest in teasing me and plunged into the pool, amid shouts of laughter from the spectators.

My experience, however, was not nearly as funny as that of Mr. Perkins, who was so sure that he could handle the elephants that he stepped boldly into the stockade with a big broom in his hand ready to sweep them off before turning them into the pool. He had a great deal of 'animal instinct' and had handled and owned many wild pets. But elephants, like all animals, love to try out a new man. Queen took hold of the broom and led him around. Empress refused to kneel

to be swept off. When he tried to open the gate, she took hold of the padlock and refused to let him touch it. When he took his hook and tried to lead her away, she lay down against the gate—ready to be swept off. He couldn't budge her. Meanwhile, Queen took his broom. When he had just decided he knew nothing about elephants and had better retire, they suddenly became docile, permitted him to open the gate, and plunged, backs unswept, into the pool.

Empress always tries her keeper just as far as his patience will stand. She is smart and wise and knows all of us who have been in the zoo a long time. She has had several bad accidents and one of the most severe was a deep cut in her foot. A visitor had offered her a drink of milk out of a bottle. Seizing the milk bottle, she put it down on the cement floor and pressed it with her foot, bearing her whole weight on it. It was a cruel and serious injury. The man, terribly frightened at what he had innocently done, reported the affair immediately. With great difficulty we probed and dressed the cut. Then the veterinarian rigged a sort of boot to keep the wound from spreading and to keep it clean. The first few times the wound was dressed we had to use a block and tackle to hold the foot up, but Empress soon learned what was expected of her and would hold it up quite patiently while we dressed or examined it each day.

Empress sometimes becomes very fond of certain other elephants in a way that we call, in vernacular, 'getting a crush' on someone. She had only tolerated Queen, who came from India with her, but when a young elephant called Culver was given to us Empress became her slave. The jealousy with which she tried to keep the youngster away from Queen was almost pathetic.

Culver's arrival among us had been very unexpected. One morning the telephone rang and a voice asked gruffly, 'Do you want an elephant?' and before I could answer, went on to say, 'Well, you'd better want one because you are getting one. This is Chris Holmes talking.'

Chris Holmes maintained a fine private zoo on his ranch in

Santa Barbara, and if he said an elephant was on her way to us she undoubtedly was. This proved to be only half the truth; when she arrived she was accompanied by a jet-black Shetland pony from whom she refused to be separated.

The episode that resulted in our getting the two animals occurred at a garden party given by Mr. Holmes. The pony, saddled and with a little ape acting the part of a jockey, was brought in to be admired by the guests but in the middle of the performance a great commotion occurred. Culver dashed their dinner in every direction, whereupon Mr. Holmes decided Culver belonged in a zoo. But when they tried to load her on a truck she became unmanageable. She could be neither pulled nor pushed. Eventually someone thought of leading the pony into the truck. Culver then nearly ran over everyone in her haste to join her friend.

This strange, interesting friendship excited a great deal of comment. Day after day the pony—the smallest Shetland I have ever seen—stayed near Culver, even eating her food between Culver's front feet. They were never more than a couple of feet apart. The elephant felt very responsible for the pony, though she was many years younger than it, and would not wilfully have hurt her playmate for anything in the world. But some people imagined that the pony was in danger and exerted so much pressure upon the Humane Society that we were eventually compelled to separate them. The pony pined pathetically until we found another home for her, this time with a Shetland companion.

Culver, however, did not grieve very long. She reconciled herself by becoming the darling of Empress and Queen. She played up to their jealousy so constantly that the two former friends became very cross and ugly with each other. We had used the old elephants for the children to ride on Sunday afternoon, but when Culver joined them Empress refused to go out and around the track. We tried to make her do it and could have succeeded but the struggle would have been too great. If she had started to bolt innocent lives might have been endangered.

Culver was the most curious creature in the zoo. As soon as she saw anything, she had to stick her trunk into it. If she found the object loose she would pick and pull at it until she had broken it apart, just to see how it was made. This bad habit once cost us considerable money. The elephant stockade was made of railroad rails covered with reinforced concrete and supposedly welded together at the top. Culver discovered a broken piece of cement near the top of a rail and began to pick at it so continuously that, in a few days, quite a large piece was broken out and some of the rail exposed. This interested her greatly. She forgot everything else in ascertaining how an elephant stockade was built. The man in charge of the big mammals scolded her in vain every time he found her at it. Then he punished her and shut her up alone on the other side of the stockade. At the first opportunity she began taking it to pieces again. One afternoon, the upright rail gave just a little. She pushed and pulled until, suddenly, the cement cracked all the way down and, in her great strength, she bent the rail nearly to the ground. Then, indeed, was she happy.

But not satisfied with having found out what one post was made of, she went to work exploring the adjoining posts, the cement of which she had already cracked. This was too much for Queen and Empress to miss. So they joined in the fun. But our patience was finished. We tied up all three until the necessary repairs could be completed. In the course of doing so, we were surprised to find that several posts had not been welded but were merely fastened to a connecting rail with wire. Culver's curiosity actually resulted in an important discovery.

Shortly after this, we sold Culver to a small travelling show for a sum of money and a number of small animals, and off she went to ride with the circus. At the time we were being given a fine big bull elephant with long, heavy tusks, and were eager to make room for him. But our joy in possessing the great 'tusker' was short-lived.

Prince, as he was called, was known as a killer and had

been shackled with a short chain for many years. He never seemed quite sure of himself in the new freedom of the zoo. But when he had been with us a few months we turned him into the big swimming pool. It was a very warm day and his pleasure was great. He plunged into the water, sprayed it over the margins of the tank, rolled about and splashed. He climbed up the steps and then back into the pool, time after time. Finally he started down sideways. He might have lost his footing, but it appeared that he rolled down intentionally. After wallowing a few minutes he came out and leaned against the house. Suddenly he acted very tired and evacuated repeatedly a loose, watery mass. It soon became apparent that he was in acute pain. I called our veterinarian and the President of the Zoological Society. Neither could understand how he could suddenly have become so ill. We got him into the house on a pile of straw by the simple method of opening the door. He went in gladly.

The elephants' sleeping rooms are not very large and the walls contain openings through which a man can reach to adjust the chains. These openings are largely a safety device, but on this occasion proved very convenient. The doctor was enabled to reach through and administer a heavy shot of morphine to ease the pain. Prince lay partly supported by his knees with his abdomen pressed into the straw. Finally his pain and distress eased. Late in the evening he fell asleep. He seemed so comfortable that we all went home.

In the morning we found Prince in the same position. He had not moved, but he was dead. Autopsy showed that, in rolling down the steps, he had twisted his intestine just below the stomach. Cattle suffering with a similar volvulus are sometimes saved by being rolled over in the opposite direction quickly, but we could not know, and even if we had, could not have rendered this aid for Prince. He was far too dangerous in his agony for anyone to have approached him.

When Empress, our biggest, oldest, and usually most sedate elephant, had been with us fifteen years we decided to

remodel the elephant enclosure. The most important improvement was the substitution of a moat for the stockade, which was removed. Around the outer border of the ten-foot moat we planted well-grown Coco palms—one of our most expensive trees and worth many dollars each, especially when tall and well-grown.

We were pleased with the handsome, showy arrangement and could scarcely wait for the arrival of the day when the great beasts were to be turned into their improved quarters. They had been tied up while the rebuilding went on and would, we knew, be thankful for the restoration to liberty.

Empress made a slow and somewhat casual round of the floor space, then entered the enlarged house and investigated it very carefully, especially the new door that slid up and down mysteriously. Next she turned her attention to the grounds outside the pen, and, holding her trunk just over the edge, felt the entire circumference of the enclosure, carefully looking for something loose or movable.

Spying the waving fronds of the palms, she tried to reach one. She found this impossible while standing square on all fours so she placed her two front feet on the very edge of the moat and pushed her left hind foot against her front feet —her toes pressing against the backs of her front feet as tightly as possible. Then she stretched her right hind foot backward as a balance, and extended her trunk upward to the waving green leaves. Just able to catch the heavy rib of the closest frond across the moat, she tugged at it with all her might. The tree, newly planted in soft earth, leaned towards her. After another tug, she twisted her great trunk around the bole of the tree, lifted it out of the ground and thrashed it about as though it were grass instead of a weight of several hundred pounds. When she had taken all the dirt off its roots, she dropped it in the moat and walked on to the next tree. Down the palms went, one after the other, until she came to the corner tree. That she left for future efforts.

How Empress poised herself when she pulled up the newly planted trees

teach her, or we may devise a way to make Empress forget the game she learned in her young life, when she followed the elephant herd through the jungles of India, rooting up and pulling up young trees to make herself a path.

CHAPTER XII

Sheik

Sheik, who grew up to be an actor, established the zoo in the motion-picture world, and is now a resident of Hollywood of many years' standing and a film star of the first magnitude. After his initial appearance in 'Beau Geste' he starred in many other notable pictures, including 'Ben Hur'.

His mother and father were immigrants but Sheik is a native son of California, being the first camel born in the zoo. As a baby he was a problem to his keepers. On arrival he had just enough body to connect a long neck to four legs and a tail. The only hint that a hump might be going to grow on his back was that the hair in the saddle of his back was a little longer and curlier than the rest of his hair. His eyes were too large for his head, his head was too large for his neck, the bones and muscles of which were too weak even to support his head, his legs were too long and thin to support his body, and he lay on the ground as helpless as could be. His mother seemed unable to help him.

The keeper of the camels, after waiting two or three hours, tried to stand Sheik on his wobbly legs, but Baby Long Legs refused to stand and the keeper had to hold him while giving him his first meal. After that he was put on a bed of straw in a corner where his mother could not step on him, for even grown camels seem to have only partial control of the spot on which they are going to place their awkward, flat feet.

From the beginning, it was evident that Sheik was not

getting enough to eat. So the camel-keeper made a bottle-baby out of him. At first he was offered cow's milk but he would have none of it. Then combinations of other milk were tried in the hope of approximating camel's milk, which is very rich and sweet. In the end malted milk proved acceptable. For three or four days he took his meals on his bed of straw; then he discovered he could stand and has taken his food on the hoof ever since.

When he was ten days old Sheik went out into the corral to play. Keeping his curly tail high in the air, he galloped around wildly. His feet insisted on turning in or out instead of going straight ahead. As a result he would find himself jammed against the fence or caught under the manger; much to his surprise, for he had thought he was travelling in a perfect circle. We then made a little halter so that his directions could be guided. As I have said, even adult camels find it hard to manage their feet and when they gallop around the stockade, as they like to do, their feet fly out at comical and astounding angles, and when they try to frolic like other animals they stumble and turn somersaults.

From the very beginning Sheik was as gentle as a kitten; there was never any need of 'breaking' him. By the time he was six or seven months old he had learned to kneel down at the command of *cush*, the call of camel drivers all over the world to their mounts when they want them to kneel, or 'couch', and be loaded. Sheik understood another word, too —his name, given to him because of his graceful form.

When he was two years old a request came from a film studio for the hire of all the camels in southern California. So we hired out Sheik, his Arabian mother and father, and our double-humped Bactrian camels. Sheik's friendliness, gentleness, and intelligence made him the favourite and he was 'shot' over and over.

His success never went to his head or made him a difficult camel to handle. Recently, when 'Beau Geste' was filmed a second time, he was again the star. Strange to say, the picture was photographed in the same location—the sand dunes

near Yuma—as that used for the first production. The company was new, the fort was new, and so was the cast. But the lead camel was Sheik, heavy and sedate, but ever ready to carry on over the hot sands with skill until the final shot was made.

CHAPTER XIII

Jack

Just before I came to the zoo a large shipment of animals had been received from the private collection of Nell Shipman, well known in the era of silent movies for her coyotes, wolves, and husky dogs. Nell herself had played the lead in *The Girl of the Frozen North*, the first of a famous series of Alaskan pictures in which police dogs and huskies were used with great success. The star dog performer was Jack, a dog wolf. After completing the picture Nell took her animals out on the road, along the Canadian border; but the hard times then prevailing proved too much for her. Stranded, she offered to sell her wild and tame dogs and many of her other animals to us at a very low price.

Jack, at the time he came to us, was very tame and one of our employees often took him out on a leash. This practice is never safe, however, for people crowd around so closely that the poor creature may become greatly excited and attack them viciously.

So Jack has been kept closely in his pen for the last seven or eight years. But he has never lost his friendly gentleness with those of us who know him. He pushes tightly against the wire, begging us to pat and rub him. He is one of our patriarchs, as he must have been at least six years old when he was purchased thirteen years ago. He is rusty and grey, his fangs are worn and discoloured, but he carries his perfect brush with the air of the great. Year after year a fine group of young wolves have been fathered by him, and even as tiny pups they have no fear of the great beast who lies stretched in the sun and permits them to gambol over him and cut their teeth upon his sturdy legs.

CHAPTER XIV

Lady

Lady, like Jack, came to us from Nell Shipman. She was the loveliest coyote in Nell's collection, with a beautiful thick brush and remarkable blond colouring.

One afternoon, when a police siren sounded across the park, Lady turned her dainty nose straight up towards the sky and began to howl mournfully. The sound was so infectious that, within a few minutes, her four or five cage companions and all the wolves next door were howling dismally, with their noses likewise turned straight up. The weird noise spread to the hyenas down the canyon, and even to the wild dingos. As soon as the dreadful din could be heard all over the zoo, Lady trotted off into a corner, curled her lovely brush around her feet, and lay down to enjoy the joke. Her companions, not knowing why they howled, continued for at least half an hour.

Ever afterward, whenever she heard a siren, Lady repeated the performance, always with a like result. But the excuse did not come often enough to satisfy her craving for excitement. So she tried to see what she could do without the stimulus of a whistle. Up went her head and a series of those sharp, strangely strident notes that only a coyote can produce fell upon the air of late afternoon. She stopped a second to listen. All was silent. She began again, barking louder and longer. Up and down the scale she wailed. Suddenly the big male wolf in the next cage took up the challenge. He raised his great muzzle, opened his lips, and roared deeply. One by one the others joined in until all the occupants of four cages were howling like the banshee.

Lady then retired to her shelf, where she yawned stretched out, and, through half-closed eyes, enjoyed the clamour and watched the spectacle of wild dogs being ridiculous.

Daily thereafter she has repeated the performance. Without this excitement her day is incomplete.

CHAPTER XV

Marie

Because of our nearness to the ocean we have rather specialized in the exhibition of sea mammals. We have tried almost everything except whales, which have never been exhibited alive. But among them all Marie will always be our most famous salt-water character.

She was positively the homeliest creature ever brought into the zoo, not excluding Dinah, the chimpanzee. Heavy, awkwardly fat, with small eyes, drooping mouth, and a bristling moustache—round, wrinkled, and all one colour, not even a pretty colour—Marie was a baby walrus brought to us by Fred Lewis from the frozen waters of Bering Sea. Her parents and their tribe had slid off an ice floe as Mr. Lewis's shore boat approached, and Marie, thus abandoned, had been rolled in a sailcloth and taken abroad the *Stranger*. Her round body was rolling fat and was criss-crossed with a network of deep, heavy wrinkles. Her heavy flippers hung in folds behind her short, heavy body, and at about two months of age she weighed one hundred pounds.

When the *Stranger* docked in San Diego I looked down into the canvas pool that had been rigged up for Marie's comfort and wondered at the affection with which everybody aboard had spoken of her. But when, at the sound of Mr. Lewis's voice, she looked up and opened her sagging mouth into a smile that spread clear across her face, I understood. Rolling her queer, round eyes—the size and colour of agate marbles—she wailed '*Ma-a-a, ma-a-a*', and it was more than human heart could resist. Down we went to her. Mr. Lewis

put his hand into the water and she cuddled against him in utter contentment.

Feeding Marie aboard the ship had presented a difficult problem, and was finally solved by giving her warm milk through a rubber hose attached to a gallon bottle. The 'nursemaid', Mr. Lewis, would don his bathing suit, go into the pool, and sit down beside Marie. She would climb upon him and drink her milk. Then she would settle her big mouth against the curve of his shoulder and go to sleep. Within a few days she came to know her bottle and whenever she was hungry, even in the middle of the night, would bellow '*Ma-a-a*' until her nurse came with her milk. She arrived at the zoo in fine shape.

Soon afterwards, however, her skin began to break out in blisters and sores, and her hair dropped off in patches, despite a strict diet and salt baths. We knew the content of ocean-mammal milk and had been approximating it by adding sardine oil, butter, fat, lime water, and iodine to the canned or fresh cow's milk that we fed her. We could think of no reason for her trouble. Finally we took her to the Institute of Oceanography of the University of California, located at La Jolla. They had a huge tank on the beach but the dark, shaded pool of fresh sea water made no difference in Marie's affliction. She missed us and cried so with loneliness that we brought her back to the zoo. Baby specialists were now called in and every known test was made to discover the cause of her disease. The doctors finally decided that milk poisoning was the root of the trouble.

The walrus has peculiar eating habits. He drops down many fathoms to the bottom of the ocean and digs clams with the heavy ivory tusks that grow upon the upper jaw of both sexes. Then, with his stiff moustache, he rakes and scoops the clams into his sucking mouth. As his mouth is devoid of teeth, he must swallow the clams whole and let his stomach do the rest. The stomach of a full-grown walrus, killed after eating, will at times contain more than a bushel of thick-shelled clams in all stages of dissolution—some with

the shells completely dissolved by the powerful gastric chemicals, some with paper shells left, and others as though they had been freshly dug. It was no wonder that Marie, a baby walrus, was finding milk insufficient for her needs.

We worked quite a while to obtain the proper formula, and Marie became famous as a medical case. As she refused to eat out of anything but her bottle, the fish, water, and other things she needed had to be administered in that way. Eventually a happy combination of finely ground fish, powdered clam-shell, salts, cod-liver oil, water, and sundry other substances solved the problem. Marie fully recovered her buoyant spirits and her coat of scant but shiny tan hair. She gained steadily until she weighed more than three hundred pounds. She was weighed regularly and did not mind it. When we went down to her pool with the sled and crate in which we hauled her around, she would push herself laboriously up the rough artificial stone bank of her big shady pool until she could crawl in.

Her voice strengthened into a roar; her tusks, which we helped rub through, became big, round white knobs on the upper jaw, and her moustache, which was only a stubble when she came, sprouted into an unladylike brush, as stiff as wire. And how she loved to rake us with it without warning!

Marie enjoyed only human companions, and she loved everyone. She would look at us as we started to walk away, with her always-watery eyes dripping tears and her mouth sagging down as though her heart were breaking, and call a gruff '*Woof, woof*' in protest. We all wasted hours just standing or sitting near by, giving her companionship. The seal trainer, who was also her keeper, became her devoted slave. One queer expression on her always-surprised face, one false gurgle in her usual cry, and he was off after a doctor, crying, as he went, 'Quick, get the doctor—Marie is sick!'

I often wonder why creatures who live so simple a life as these great, fat Arctic beasts—who drift about on ice floes, drop occasionally to the bottom of Bering Sea to dig clams,

and sleep for days while Nature does her laborious work of turning clam shells into blubber—are gifted with so much real intelligence. Before Marie was at the zoo a week we knew that she was one of the smartest babies we had ever had. She knew our voices and would come at the call of her name. She was affectionate and desired nothing so much as to be patted, hugged, and given all sorts of attention that no other self-respecting sea animal would accept, let alone enjoy. She followed us like a dog over rocks and through deep dust, and won the instant affection of all who saw her.

When we were producing a series of radio programmes, Marie took part in them, as she did in a daily seal act. Her role was to answer questions, which she did intelligently with a '*Woof, woof*'. If we scolded or spoke harshly to her, she prolonged the *woof* into an increasing string of plaintive *woofs* that developed in a heartbreaking crescendo.

For fifteen months she grew bigger and fatter, and was eventually weaned from the bottle to eat clams of our own manufacture. These consisted of a mixture of finest white fish and rich dark mackerel cut into one-and-a-half inch cubes. The cubes were dipped in sardine oil to which had been added a little iodine and viosterol, then taken out and rolled in powdered clam shell until they looked just ready to be popped into a deep-fat-frying basket. They were served upon a clean, white, solid plank table. Marie herself selected the place from which to eat—a little ledge just above the table from which, with her short neck, she could easily reach the luncheon set below her. Her funny, drooping mouth would open wide to suck in material directly beneath her chin. She could not bite or pick up things placed at any other angle. When the last clam was gone, she would wipe her moustache on the skirt of her keeper's smock, close her eyes, drop her head against him, and go to sleep. Despite a stiff leg, badly crippled years before from a tiger's attack, he would sit and permit her heavy head to lie against him until his leg was nearly paralysed. Not until he could slip away from his sleeping baby without disturbing her would he

move. Once when Marie was at the lowest ebb of her baby-hood sickness, he was discovered far in the night sitting on a pile of salt sacks sound asleep. Marie was stretched close to him, his arm was over her neck, and her whiskers were pressed against the leg of his trousers. She, too, was fast asleep.

Her death was totally unexpected and unnecessary. One day the keeper came upon her dead body lying in the corner where she had waited for him every morning. Never had she seemed in better health and spirits than at five o'clock the night before when I had watched her eat her supper. His grief was pitiful. He began hunting for the weapon that might have killed her and found a heavy stone which he tried to think had been used. But an autopsy showed that Marie had died of a very virulent form of bronchial pneumonia which had developed with fatal rapidity in an animal with no resistance to it. We knew that the disease had reached epidemic proportions in our city and had ordered all employees to remain home at the first cold symptom in order not to endanger the animals. The source of Marie's contagion, of course, could not be ascertained. It might have been brought in her fish, or some zoo visitor may have contaminated her water or the ground in the corners of the fence where Marie loved to lie, waiting to entertain visitors or visit with her friends. However it came about, we lost in Marie our second most popular specimen. I have always put Maggie, the orang-outang, at the head of the list, with Bong, a cheetah, and Marie tying for second place. Every man, woman, and child in San Diego and near-by counties knew her by name at least. She was the friendliest creature we ever had.

I never look at a fat baby seal which has come to us, sick and abandoned, from a near-by beach and has lived and grown because of what Marie taught Doctor Schroeder, our veterinarian, but that I salute her noble spirit.

CHAPTER XVI

Mickey, or 'Mrs. Benchley's String'

Like Marie, Mickey, a tapir, was brought to us by Fred Lewis. He bought her from some natives while on an animal scouting trip up an Ecuadorian river. She found life in a crate aboard the palatial *Stranger* most unpleasant. If any person without the experience and patience of Mr. Lewis had been bringing her to us I doubt if she would have arrived alive.

But arrive she did, thin, active, and strong. Soon afterward, however, she began to go downhill, for she refused everything we offered her to eat, including the kind of food she had had aboard ship. She grew weak so very rapidly that in order to save her I suggested that she be moved near my office, where I would undertake to care for her. So Mickey became 'Mrs. Benchley's string'. To-day if I pass her pen and Mickey does not whistle and come running out, I am always just a little bit offended, for Mickey is perhaps more nearly my own adopted child than any other creature in the zoo. I am sure she has never had a doubt that I am her real mother.

The first morning I fixed her up a nice mash and, remembering that she had liked salt water aboard ship, I made it good and salty. In addition to whole ground corn, I added some regular breakfast rolled oats and whole milk. Covered with a huge smock, I carried the warm mash down to her pen and went in. When I opened the door of her sleeping quarters and released her, she came out slowly, wondering about her new environment and her new keeper. I put the

Mickey, the tapir, never dreams I am not her mother

tub of mash close to the door and sat down near it. She had always been helpful and hopeful, smelling everything we offered before turning dejectedly away.

This morning the mash apparently appealed to her and she stuck her long, soft nose down into the tub, took a bite and pulled her nose out. Then the long elastic nose reached out and touched my clean smock, I patted her encouragingly, and the nose went deep into the warm mixture a second time. She ate freely, every now and then turning to me for a little attention, which I was happy to give. Having eaten all she wanted, Mickey turned and went back into the house to lie down in clean bedding. That morning I resolved she should have a mudhole big enough to immerse herself completely, and one of the gardeners dug it—round, deep and dirty. The tapir has a peculiar habit of staying much of the time under water, protecting its tender skin from stinging insects and soaking in the damp coolness along the edge of lake or stream while feeding on tender lily bulbs.

Day after day I arrived at the zoo at seven o'clock, cooked Mickey's breakfast in an increasing quantity, and sat with her, patting and encouraging her, while she ate. The company seemed to do her as much good as the food. I stuck to it all summer. Finally, Mickey became not only fat and healthy, but leggy and big, until to-day she is by far the largest, handsomest tapir of her kind I have ever seen. She is as tame as can be, but has little respect for my age and size. She would just as soon upset me, with a bump of her heavy head, as anyone else. Yet she knows my car and my voice and, when she sulks in her pool, I have only to call 'Mickey' and she will heave her ton of flesh out of the deep water, sound a tiny whistle, extend her nose and point forward her white pencilled ears, and lumber across the rough yard to be petted before she can see clearly, with her near-sighted eyes, who it is or where I am.

To Mickey I am not a zoo director who orders that such and such be done and leaves the rest to fate, but an indulgent, affectionate foster mother who patted and washed and petted

her when she was a lonely little homesick tapir, and who let her rub her sticky flexile nose even upon my face so that she might be sure not only of warm, tasty food but of trusted companionship, while she ate and slept.

CHAPTER XVII

Woody

In 1929 I visited several zoos in the eastern States. It was my first official trip as a zoo employee and naturally I tried to arrange rare deals. One of the animals that had always fascinated me greatly was the beaver, though my acquaintance with beavers was slight.

On my return I bragged to Dr. Harry that one of my deals would result in the acquisition of a pair of beavers in the spring. A peculiar gleam came into his eye, but he said nothing, and I went ahead to have a pen staked off on the edge of the goose pond. Some wire was sunk deep into the ground to prevent the beavers' escape and every tree within the pen (except some wild willows we intended to remove anyhow) was protected with a cuff of metal netting.

When Woody and his mate arrived I was much impressed by their container. It was a metal-lined crate with a platform, a shallow metal tank, and a rack on all four sides that had contained short alder faggots standing on end. From the litter of chips it was easy to see that the beavers had been busy on the faggots all the way from Pennsylvania.

Immediately upon being released they took to the water and gave us a beautiful demonstration of beating it with their flat tails. Their first act of adjustment was to cut down the willows at once. Then they kept a man busy supplying wood for them to cut and carry on to the top of a little lodge erected for them. Daily they plastered mud on these sticks and slapped it down with paws and tails. They accepted acacia, eucalyptus, and cypress as readily as willow or sycamore.

One morning several of the gardeners complained that their tools, left neatly piled in a corner of the goose pen the night before, had been stolen by prowlers. They were given a new set of tools and we continued to wonder what had happened to the old set. Weeks later I noticed a smooth, round stick protruding from a mass several layers deep. I pulled, and out came the handle of a hoe, the blade neatly cut off. Upon exploration we found all the tools that had so mysteriously vanished. They had been used either whole or cut to pieces, as suited the builder, for building material and had been neatly plastered over.

Unfortunately the female of the pair died a few days before young would have been born. Woody was moved into a smaller pond to live with the swans while some extensive repairs were made on the goose pond. A week later, the foreman came into my office and confessed, with a shamefaced grin, 'Your beaver has been out of his new pen for several days. He escaped the first night and we didn't want to worry you. We have searched through the zoo, we have tried to trap him with food, but there is not a trace of him. We have even watched the lily pools outside the zoo and have looked for marks on trees. What can you suggest?'

I thought a minute and then said, 'I don't know, but heaven help us if the superintendent of Balboa Park ever finds we have a loose beaver.'

Asking myself 'Where would you go if you were a beaver?' I got into my car and drove slowly past the pen into which Woody had been moved. The gate was locked by a padlock in the centre. I stopped, got out of the car, and went to work on the gate, pushing with all my might just at the bottom corner. When I discovered I could spring it several inches, I knew how the beaver had escaped. I walked slowly along the canyon towards the goose pond, looking for signs of tree-cutting and scanning the fence along the way. There was no sign of fresh work.

The foreman had said that Woody couldn't possibly get back into the goose pond, but I knew that if I were a beaver

I would do everything I could to get back home. So I began to survey the pond minutely. It was late afternoon. The geese had just been fed. Greens still floated on the water and some uneaten grain had slid off the bank into the pond and was not yet waterlogged enough to sink. I chose a likely spot and sat very still.

Suddenly, under the edge of the old beaver house, I saw a stir in the water. A paw reached just above the surface for a cabbage leaf and pulled it under. Several leaves disappeared in the same way and then, so slyly that only my very nearness enabled me to see it, a dark-brown nose came up to a level with the water and seized some floating barley. I spoke. There was a flurry and a slap and a dark body was revealed as Woody dived under the ledge to safety within his house. Overjoyed, I reported the discovery to the foreman. Woody was returned to the swan pond and the gate was locked, securely.

I always feel apologetic about the beaver pen. It is a torn up, messy-looking place because Woody is always building something. One night by means of a ramp which he built of sticks and refuse he cut a beautiful tree just above the protecting metal band. The sapling fell so that its top just floated on the edge of the pond. The slash had been perfect, the fall just where it would do the most good with the least effort.

The only time Woody ever gets really excited and comes out in broad daylight is when we drain the pool. Then he digs dirt and carries trash in a frantic effort to stop the fall of water. He cannot do it, of course, because he cannot find the opening, which is in the bottom of the pool. At other times, he tries to raise the level of the water by building a little cuff around the overflow standpipe and filling in the overflow with trash. As an engineer he retains all the respect I ever had for him, but as an exhibit I agree with the zoo director who said, 'The best way to exhibit a beaver is to paint a handsome sign on a neat fence encircling an area containing nothing.' Now and then, after four or five o'clock in the afternoon, we catch a glimpse of Woody swimming, but he dives

swiftly out of sight. Only the refuse and litter in his pen and his constant attempts to cut the trees above their barriers remind us that we have a beaver on exhibit. I fully understand now the queer look on Dr. Harry's face when I told him of the exchange.

CHAPTER XVIII

Bum—a Philanderer

Bum is a strange name for a bird who is the pet of everyone, but that is just what Ring, the old birdman, called a big Andean condor we received in 1929 with some rare antelope, monkeys and a few other birds in an exchange for seals. He was a young bird, not yet in full plumage. But the ruff of fur around his neck was already snow-white and the comb along his beak and head large and well-grown.

He seemed a friendly fellow when, on my knees, I peered into his box, and I could hardly wait until the large box had been brought into the cage that was to be his home. When finally the nails were pulled and the door had been opened, the condor lowered his head to look out, and then, with the teetering walk of a dowager taught in infancy to spring from the balls of her feet, he minced out into the warm June air.

Bum's tail feathers were broken, and he was dirty and messed from his forty-day boat trip. But instead of going towards the pool, the spot most birds seek first, he turned around two or three times and then, with body very erect and head held high, began to spread his wings. It seemed as though they would never stop stretching. When they were fully horizontal, he wheeled around and around, drinking in the warmth and sunlight with his whole body. We did not measure his wingspread then, but later when the broken feathers had grown out and he was in full plumage we persuaded him to stand still so that we might mark the tips of his wings on the ground for measuring. His wingspread was ten feet four inches.

At first Bum cultivated all of us. He would rub his bare head against our clothes and beg us to pat him. He would take our fingers carefully in his great beak and hold them so that we could not leave when we tired of playing with him. He would also hold our clothes and pull, not quite so gently, to keep us in the cage. But before long he centred all his attention upon Ring, a small man in charge of those particular cages. He would follow him around while he cleaned the cage and pull at his bootlaces or reach for the keys dangling from Ring's belt. He delighted in running his head into Ring's coat or pocket, and at times it was comical to see him pester the little man at his work. If Ring was in a hurry he had to take a light bamboo rake and chase Bum up into a tree until he could finish picking up bones and raking the cage.

One day when Ring sat down on the ground to fix his rake, Bum, who had been coaxing him to play, walked over and pushed his head between the buttons on Ring's khaki coat. Overbalanced, Ring fell back flat upon the sand. A visitor, startled by the sight and thinking the bird would certainly devour the man, yelled for help. Ring, hearing the voice, sat up, and, taking the big bird by the head, pushed it to one side, saying, 'Get off of me, you big bum!' The bird responded to the name instantly. 'Bum' he was from that day on.

Early one morning Ring went into the cage and lay on the ground to see what the bird would do. Bum came immediately and stood anxiously over the body. Finally he planted his great feet on Ring's chest and turned so that his wings completely sheltered the man. He stood there like a guardian angel. After that he posed often in this attitude for pictures.

Bum loved the keeper with a whole-souled devotion. But as he grew older he sometimes forgot the strength of his great beak and once or twice held on to Ring's hand more tightly than he realized, tearing the flesh severely. Ring never protested or scolded. He would always hasten to explain that Bum hadn't meant to hurt him.

By the time Bum was seven years old he had assumed the full plumage of the male condor. His shoulders and breast

were dusty-black, his magnificently strong flight feathers a dove-grey. One can gain an understanding of the flying power of the condor by taking a wing feather and trying to pull it apart. It stretches out like crepe before the component parts can finally be separated with the fingers.

In the old cage with Bum were several other vultures. He paid little attention to them until he became mature. Then he attacked two gorgeous King vultures and injured them severely. After that we built a partition dividing the cage into two parts, thus separating Bum and several eagles from all the other vultures. When Bum didn't like anyone, bird or man, he made life miserable for him. Once he so disliked the man who substituted for Ring on his day off that he refused to let him come into the cage.

One day I went out to see Bum. He was standing erect, his wings were widespread, and his brilliant red-and-yellow neck was swollen and extended like the stem of a great bass viol. He was whirling and turning, proud and bold. I called and called. Until that time whenever I called he had come down out of his favourite crotch in a tree and had hopped with great springs to where I stood beyond the fence. He would press close to the wire so that I might rub his neck and would take my fingers gently as though they were Ring's; but on this occasion he would not come. He had suddenly become enamoured of an eared vulture in the other half of the cage. He tried and tried to find a way to get through the fence to her, but in vain. She was safe on the other side. As long as she stayed in that cage, Bum flirted with her, but not constantly. He was often distracted by one of her friends.

Before I knew Bum I had thought of vultures as loathsome birds. Since then my views have changed. They do not eat carrion from preference. I have never seen any of our vultures go back to meat or fish that has become decayed or stale. They prefer clean, wholesome meat, but do not kill unless they find weak creatures that they can attack on the ground. They cannot carry their food in their dull, chicken-like claws, but must eat it where it lies. They need the fur,

bone, and intestines of these creatures for lime, and such additions to red meat must be given to them in zoos. Bum is exceedingly clean. One day when he was eating I called him to me. He turned his head away from the red flesh. His beak was bloody, and he was really repulsive. He reached down, tore off another choice morsel, then trotted toward me. But before he had taken many steps he stopped to rub his beak and head in the coarse clean sand, first one side and then the other. When he started towards me again his beak and face were spotlessly clean.

Bum now lives in the great flying cage built recently for our birds of prey. In it are two other Andean condors, one a male and the other a young female just coming into colour after her fourth year in the zoo. Lately she has been carrying sticks around trying to attract Bum's attention. She has even selected a ledge for their future home. But Bum is paying no attention. Instead, like an incurable philanderer, he is wasting his magnificent masculine charms by displaying them for the favour of a small, insignificant, black-headed vulture not yet mature.

CHAPTER XIX

Reddy

All the famous characters in the zoo have not been rare or valuable. Among the important ones are creatures that have been turned loose to wander about the garden, and perhaps Reddy, a common red fox squirrel, is the most outstanding of these because he seems to know he is not a free squirrel but an exhibit. He is everybody's pet and many times when, after talking to some group, I would offer to answer questions, people would ask about Reddy.

Squirrels are well-known for their attractive appearance and cunning ways. We were delighted, therefore, to receive Reddy from a city hotel. He had been living in a roof-garden cage with other squirrels. One by one they had succumbed to overfeeding by the guests, and Reddy looked as if he would soon join them. His tail was scraggly, his coat patchy, and he was overfat. He was also cross from being teased and from lack of exercise.

We kept him in a big cage away from people until he forgot what pests some human animals can be. Then, when he had become very handsome, very red, and had a fine big brush, we turned him loose in the garden to associate with some Anthony grey squirrels. But he cared nothing for these and established himself near the café and main gate, where he begged for peanuts and scraps. With complete freedom, he lost all animosity for mankind. He knew well that no-one could catch or torment him so long as there was a tree up which to scamper. Let a child so much as reach a hand towards him and he was off, chattering saucily from an over-

head limb. But if the child sat still he would climb on his lap and eat from his hands.

Reddy would grab a peanut, dash away to bury it for his winter hoard in a soft flower bed or under a tree, and hasten back lest he lose the opportunity to obtain more food to add to the store he gathered against a famine that never came. I feel sure he must have buried half a ton of peanuts during the years he lived with us. And I am equally sure that he never went back to retrieve one from the hiding places he dug for them.

He would run towards children coming into the zoo, stand up and beg prettily. If they had no peanuts, he would run to the glass showcase and call their attention to the source of supply by scratching on the glass. If the hint was not taken he would hurry on to the next incoming group. He was especially busy on Sundays and holidays.

He always knew by the odour when we were sacking a fresh bunch of peanuts in the kitchen, and seemed to think that if we were putting away peanuts it was also time for him to put aside something for a rainy day. So he would run up an apron or a trouser leg, perch himself on the edge of the carton of warm nuts, snatch one when chance afforded, jump down, scurry away to bury his treasure, and return in a minute for another.

As he grew older Reddy spent more and more time in the kitchen and became very fat from too high living. Then one day he could not get up on the bench, but half lay on the floor. I picked him up in my hands, and for the first time he permitted me to handle him freely. Examination of his puffed abdomen disclosed a growth. So Reddy went to the hospital where it was found that he was past medical aid. The only loving kindness we could offer Reddy was quickly and painlessly rendered.

CHAPTER XX

Niño—the Little One

Experience has convinced me that no proper zoo director should ever permit herself to become partial to any particular animal or group of animals. In order to provide a balanced and valuable collection the head of a zoo should be just as interested in acquiring the small, grey, insignificant mate to the handsome finch as in obtaining the rarest bird of paradise.

I have, however, had one office pet, a tiny Garnett galago. Niño came to me without choice on my part and upon him I lavished more affection than a zoo head should lavish on any one individual under her care. Although the galago is of African origin, Niño arrived with a shipment of animals from Australia.

Galagos are one of that group of lower primates which fill the borderland between the highest form of animal known as the primate and the lower orders.

Like most of his relatives, Niño was entirely nocturnal, and beautiful with long, soft grey fur, mottled at the tips with tan and black. His ears were far too big for his tiny head and his eyes too large and too round. His fluffy tail was twice as long as his body and he could flirt it about in clever ways to reveal most of his emotions. His little hands and feet were very human in shape, but each finger and toe ended in a wide spatulate pad, thus enabling him to cling to bark or smooth surfaces.

All day long he slept, securely rolled up in a small open nest box partly covered by an old wool sock which he adored

—or he crawled through a little hole into a closed box where it was completely dark and where he could rest undisturbed.

I tried to make him stay awake at least part of the day, but was never able to do this. Often, however, when staying on at night after everyone else had gone, I would close my doors and let him loose on my desk. At first the little fellow just sat and trembled, or he would try his puny best to defend himself against me. His bite was less severe than the prick of a pin, and when he realized that it did not free him, he usually desisted. Gradually he became resigned to my touch, and finally seemed to like it. In time he became very bold and playful, hopping on his long back legs all over the desk, stopping to listen, and always watching me closely, ready to spring away at any sudden movement of my hands.

His initial actual jump off the desk on to me was quite accidental and surprised him as much as it did me. As he paused, first on my arm and then on my shoulder, he seemed to realize that he was not endangering his precious liberty. From then on his acceptance of me, first as a piece of office equipment, and finally as some sort of living companion, developed rapidly. He would scramble over me to go to the window and watch birds in a cypress tree just outside. Again he would perch himself on some small ornament or desk equipment, sit erect with his little hands held out, and study me for long periods. When finally he perched on my shoulder and investigated my hair and ears and collar, my pleasure was unbounded. Suddenly I realized that I had become very much attached to the tiny fellow.

As I continued to associate with him I discovered many things about him that convinced me he actually had as much real brain as anyone could expect to find in the head of a creature whose weight was twelve ounces and who could live for a week on a small bunch of grapes and half a dozen meal worms. Each day he had a good thimbleful of bread and milk, a tiny slice of banana, a grape or strawberry, and a bite of orange and perhaps a meal worm and a few flies or other

insects which he may have caught as they crawled into his cage. He was so dainty about his food that everything had to be exquisitely clean. The floor of his cage was covered with clean sawdust and he had a branch with many twigs from an acacia tree wired clear across his cage, horizontally, eighteen inches above the ground. He could spring to it from the ground and land on his tiny feet in perfect balance without touching his hands. He would pick up his slice of banana or a grape and hop to the branch with it in his hands and sit balancing himself with his tail while he daintily finished his dessert.

One night I must have fastened his cage carelessly, for when I arrived next day the door was ajar and the cage empty. The door of the office stood wide open and the way was clear to the outer office where a large circular hole in a glass ticket window furnished ample means of escape.

Heartsick, I searched my own office diligently, but no trace of him could I find. I had been hoping that he would confine his wandering to the familiar territory where he had so much fun running up and down curtains and leaping about, but he was gone. We searched every possible nook and corner of the adjoining offices and came to the conclusion that, if he were there, he must be under the huge safe. I poked carefully, but could discover no sign of him.

That night we closed every hole and put food in his little dish on the floor of my office. In the morning the food was seemingly untouched. The next evening I put some fruit and his little dish of bread and milk in his cage, hoping he might be tempted back there or go into either his beloved sock or his tighter box.

The next morning much of the food—a larger amount than one of his ordinary meals—had disappeared. If he had been subsisting on spiders and bugs, his supply must be getting low. We were sure now that our little fugitive must be in one of the offices.

That evening I put food in a bird-cage near the safe, which I felt sure was his hiding place. The fugitive was getting

bolder, for as I closed the door into my office he sought and found the food in the bird cage.

I decided to stay at night and give Niño a surprise. It was autumn and night came early, but there was a patch of bright moonlight on the floor. I sat motionless in the darkest spot I could find behind the desk. Sure enough, as soon as everything was still, he slipped out so silently that he was far out in the room before I saw him. Then he hopped to the spot of moonlight, sat upon his haunches and looked around. He flirted his tail in derision and jumped up and down, enjoying his complete freedom. Back and forth he went, nearer and nearer the bird-cage and food. When at last he reached it, he quickly selected a small piece of soaked bread and hopped back into the moonlit spot to eat. His tiny, dainty body in the bright beams made a lovely picture, and he seemed to realize it.

I never knew just what attracted him to me, but suddenly as he leaped he turned his great owl-like eyes in my direction and seemed to stop in mid-air. He stared at me and then seeming to know how helpless such a clumsy big giant as I would be, he hopped towards me, then back and forth, higher and higher, as though defying me to catch him. I made a quick movement and he was under the safe like a flash, giving his tail an extra flourish as he disappeared. I waited an hour during which he peered out frequently to see if I was still there, but he refused to come out again.

The next night I put the food so far back in the bird cage that I could drop the door before he could escape. I held it up with a string. Peering out, he spied me and so stayed in his hiding place. But after an hour or so he came out and hopped around, keeping as far from me as the room would permit and refusing to go near his cage. I sat silently until something outside the room startled him and back he darted under the safe.

Three more nights I kept vigil; the last two I sat down on the floor, each night a little nearer the cage, without trying to drop the door or make any sort of move towards it. The

fourth night I sat very close to the cage, which had been moved a little farther away from the safe. This time he danced around the door, not a bit interested, apparently, in food, and then suddenly without a bit of warning—he hopped to my lap and ran up to my shoulder. I sat perfectly still and down he came again. I moved my hand towards him and he cuddled down into the palm. Cupping my left hand over him I carried him back to the cage in my own office, which had been equipped with fresh limbs and sawdust and had been newly painted, during his furlough. He rushed first to one part and then to another, glad to be home. He had surrendered of his own free will, had given himself into custody, as it were, having grown weary of his adventure with freedom.

For five years I enjoyed Niño's cunning ways and exquisite beauty. He never made friends with anyone else, although he endured several others, especially one little girl who was very gentle with him. Then one autumn, during the first cold spell of the season, he died of pneumonia. I was away on a collecting trip. I have not wanted another office pet, but perhaps an occasion will again arise to make it necessary for me to keep some other little fellow in the office. And no matter how strong my resolve not to become attached to him may be, something will impel me to love him until I have again become pet-possessed.

PART 4

I Discover Gorillas

CHAPTER XXI

Mbongo and Ngagi, the 'Greatest Show on Earth'

Mention is made of the manlike or anthropoid apes early in literature and the word gorilla actually appears as early as 500 B.C. I have searched such writings and read the works of Paul Du Chaillu, published in 1854, and have brought my studies to date by reading the works of many other scientists, including the great Akeley, who have written on gorillas in the wild and those in captivity. But one cold, crisp October morning two young mountain gorillas were turned out into a huge cage in my own zoo and then I discovered gorillas for myself.

For weeks there had been articles in daily papers announcing that Martin and Osa Johnson were returning to America with two mountain gorillas captured in the Belgian Congo ten months before. And finally I read that they had landed their precious cargo. There were then only three gorillas in the United States, one in New York, one in Washington, and the finest of all, Bambo, in Philadelphia. I thought once or twice with some longing about having these two gorillas with us in San Diego but tried to put them out of my mind as I felt sure we could not bid against some of the greater zoos with more funds for such purposes.

Then one day several months after their arrival I read in a magazine that the two famous young gorillas were being boarded in the Central Park Zoo because Martin Johnson had not been able to determine what he should do to ensure

best their chances of living and thus fulfil his voluntary promise to the Belgian king.

I sat down and wrote him a very long letter, not trying to buy the gorillas but trying to sell him on our zoo. I stressed our family type of groups, our huge out-of-door cages, our fine air and sunshine, our abundance of fresh fruit and vegetables all the year round, and I boasted not only of our success in keeping truly rare, delicate creatures alive, but of our birth record, believing that the gorillas were a pair. I didn't tell anyone of my letter to Martin Johnson, which would surely be ignored if he were promoting his gorillas for the highest bid.

But one morning I received a telegram which read 'DISREGARD LETTER. WILL PRICE GORILLAS TO YOU FOR FIFTEEN THOUSAND DOLLARS.' It was signed 'MARTIN JOHNSON'. And when the letter came I learned that he had consulted the Bronx and other zoos as to what kind of zoo we actually had. The response was so complimentary that he had offered by letter to sell us the two gorillas for twenty thousand dollars. Then after another interview with one of our most enthusiastic friends he wired voluntarily reducing his first figure because his interest in wild life far exceeded the desire for profit.

Being a poor hand at obtaining money, I coaxed our president to try what he might do to help us to buy the gorillas and I was a little surprised when he returned with the money. But even though he had raised the fifteen thousand dollars I still lacked a proper cage in which to hold and exhibit such tremendous and famous animals. So once more I wrote to Martin describing in detail the sort of cage I hoped to build. Straight back came a wire donating the cage.

Rumours had been rampant among scientists and zoo people about where the gorillas would eventually go. We made all arrangements and then we wired our superintendent, Ralph Virden, who happened to be in New England, to meet the Johnsons and take possession of the two famous apes. He told me when he received my wire that he could not

imagine what had happened, for at the Park Executives' Convention he was attending the talk was that the famous beasts had not as yet been sold.

On the train Virden met the president of another zoo, who said that he too was on his way to New York to take possession of the gorillas, which his zoo intended to purchase. This filled our superintendent with consternation, but the Johnsons met him as planned and soon he was off for the West with the two youngsters.

I had seen gorillas, but I was totally unprepared for the sight which met my eyes when Mbongo and Ngagi arrived and solemnly marched out, one behind the other, into the sunlight. They walked out with none of the excitement characteristic of monkeys, baboons, and chimpanzees but with that deliberation and poise which has never failed to excite my admiration. The smaller and more adventurous one came first. He was Mbongo; Ngagi, who, having lived longer among adult gorillas, had learned more of the jungle law, followed. He never does anything until he has studied it, or the younger one has tried it, for in their case apparently the law of the jungle forbids a gorilla to touch anything new until the leader assures himself of its harmlessness. And so it was with caution, not with fear, that Ngagi entered upon his new life. I was to see the older, wise gorilla many times touch the shoulder of the daring Mbongo and with a warning grunt stop him before he placed himself in jeopardy. Mbongo never dreams of disobeying, for discipline seems to have been an accepted fact between them. I cannot but admire the implicit obedience of the younger, though at times I deplore his subservience.

A large crowd, members of our Society, photographers and reporters, had been waiting patiently for the cage to be opened. But I, unable to restrain my eagerness, peeked into it to see what they looked like. I shall never forget that first glimpse. They sat huddled down in their great black coats, the hair of their crowns coming down close around their innocent, childish faces like hoods of soft black fur. They

seemed neither afraid nor upset, for their great black eyes peered back into mine for a minute, then turned naturally away as might those of anyone trying to see what was going on behind him.

They accepted the food we offered them the first day, but paid no attention to us as individuals. They did not approach the food until we had stepped back where we could not possibly come in contact with them.

We have had great trouble getting chimpanzees and orang-outangs into the sleeping cage the first few nights, but the two gorillas walked in when we opened the door as though they had lived here all their lives.

The next morning I arrived early to make sure everything was all right and brought them a treat in the form of a great bunch of luscious red grapes. When they came out they had already been fed and at first appeared to take no notice of either me or the grapes. Ngagi went at once to the drinking fountain and dipping his great hollow palm into the fresh running water lifted it high, tipped back his head, and let it run into his big red mouth. I went inside the guard rail and called them by name. I was completely snubbed and with an air that conveyed at once that there was nothing accidental in the oversight. I know now that the gorilla is the most haughty aristocrat that I have ever met. They looked right at me without seeing me.

I went back and leaned against the guard fence and began eating the grapes one by one. Mbongo, who had wanted to come when he first saw me, paid little attention to the grapes but Ngagi, the greedy, looked and his mouth watered. He would not come himself but walking to the smaller one he put his face close to the other big, black face and grunted once or twice, then turned towards me. Immediately as though he had been ordered to do so, Mbongo walked over and, eager to do my part, I stepped forward with a grape between my fingers.

He put his big lips to the wire and I hesitated before pushing my fingers through far enough to give him the grape

right into his lips. I wonder now why I could not have perceived at once that calm gentleness; in all the hundreds of times I have fed them, putting my fingers right between their lips, neither has ever tried to bite me or to snatch, as most chimpanzees will. I gave him a few grapes on the stem and he walked away. When Ngagi took them from him, Mbongo, really eager now, returned for more. This time he had learned something: he stayed right there and ate them one by one from me rather than risk taking them to one side.

I still love to feed the gorillas, and even to-day I am always surprised by the soft, velvety texture of their lips. Their teeth, which were amazing to me because of their clean, shiny whiteness, are spaced rather far apart and of equal length. For several weeks I did not discover that Ngagi had lost four of his lower teeth and that two of the new second teeth had already come in.

I had been hoping to see inside his mouth, but he was quite shy with us and it was much more difficult to learn anything about him than about Mbongo. One morning, while feeding Mbongo, I thought I saw a gap in his row of lower teeth, and so I called for more fruit and put it bit by bit into his mouth. He always enjoyed this little familiarity and would put his soft lips out against my fingers. When I pushed up his lip, as though by accident, I saw that he really had lost a first tooth. I called his keeper and Henry came close so that he, too, could see the gap. Mbongo seemed to think that what we were doing to his lips was quite pleasing. So I made it a point to show him that we were looking at his teeth. Apparently the big space felt queer to him, for he kept putting his tongue into it as though he were suddenly very conscious of it. Finally, he realized that it was the queer hole that interested us and became very proud of it. In fact, every time I went near to feed him for several days he would open his mouth and stick his big red tongue in the opening. The way he displayed it to Henry and me convinced us both that he took full credit for having accomplished something very unusual. At the time we arbitrarily set his age at about five

years, although we had no data closer than comparison with a child and a chimpanzee upon which to base our estimate.

I have made it my business to feed the gorillas, at least once each day, with dried prunes, grapes, green corn, or some treat which at that time of year was not included in their regular diet, but which fitted in well with the feeding schedule. The first day I brought corn Ngagi seemed to pay more attention to me and from that time on I fancied that he was more interested in me than in anyone else.

In all of the times I have fed the gorillas I have had only two adventures which for a moment seemed to contain any element of danger. The first one was due to a hasty impulse on my part which I should not have obeyed. I was feeding them one day in their sleeping room and dropped a piece of fruit into the cage which I thought they had failed to notice. I thrust my hand through the bars to retrieve it and give it to them. Apparently Ngagi thought I was taking it away. He grunted, took hold of the sleeve of my blue sweater, and pulled. I let the sleeve slip off of my hand, and, as he kept pulling, I unbuttoned it and let the whole garment slide into the cage. When he saw that I was white where before I had been blue, he was terror-stricken and shoved the sweater back at me through the bars. Then he went to the farther corner, where he watched me sullenly from under lowered brows until I put the sweater back on. His relief was quite apparent, particularly when I ignored the incident and again offered him his fair share.

Another time I was feeding them raisins through the wire in the outer cage and was trying very hard to get a look at Mbongo's teeth, for he seemed slow about cutting them. I had been feeding Ngagi with one hand and Mbongo with the other, and in my efforts to see into Mbongo's mouth I drew the fingers from which I was feeding Ngagi just a little farther back out of the pen. He tried and tried to get a raisin with his lips, but failed. Then, realizing that he was being neglected, he pressed hard against the wire and took the very end of my second finger in his mouth and closed his

teeth upon it. Startled, I began to withdraw it, but on second thoughts realized he had not done it viciously or with intent to hurt, for he could have bitten the end off just as well as not. He who bites through a two-inch carrot as though it were a banana or through a cob of corn with perfect ease had not left a mark on my soft flesh. So I pushed my fingers farther through to show him I understood and again, although he looked at me with a troubled expression, he seemed to know I was not offended.

In a month of forced labour their great cage was completed. I had watched to see what we could provide for their comfort and pleasure. They loved their tree stumps, a fact which confirmed what I had read of the deep ruts around stumps in the gorilla territory where young ones had apparently played tag. They loved to dip their great hands into water and let it run into their mouths; they loved to fill the hollow palms with water and beat upon their hairy chests, leaving them wet with glistening drops. We put not only a fair-sized drinking fountain in the corner, but a big bath about eighteen inches deep beside it. We put great stumps in their cage, some with logs attached. My mother sacrificed a sturdy live oak from her mountain ranch for them to climb, and they have literally worn it out. Great two-inch ropes hang from the eighteen-foot ceiling and on these they swing by the hour, as probably they swung from the tangled vines of their jungle home. Artificial things do not interest them even yet, although now and then they use the swinging hoops and other appliances we have provided.

Gorillas do not sprawl on the floor of the cage as many monkeys and apes do, but prefer to sit like people on something about knee high, with their knees bent and their enormous feet flat on the floor, just as people sit. They drop their hands in their laps and even rest them on their knees. Mbongo often leans his elbow on a stump and, looking off into space with his fist doubled up under his chin, copies exactly the pose of Rodin's 'Thinker'. To cater to their preference we built knee-high seats in each corner.

We rushed the cage through in record time, drying the concrete walls artificially to have it ready for Martin and Osa to see when they came out on a speaking tour. I had never met them and was most anxious to have the gorillas occupying the cage which they had given as a permanent home for their 'two babies'.

Although Mbongo had taken food from my hand and we had had little difficulty in getting them into their cages and out again, it was definitely understood by us all that we had not been accepted by the two gorillas, nor had they actually shown any indication of knowing that they had finally arrived at their destination and were our gorillas. They permitted no familiarity even from me, nor did they ever include us in their good times or their regard. If anyone had asked me about the vocalization of gorillas up to the November day when Martin and Osa arrived in San Diego, I would have said that they 'grunted under their breath'.

The Johnsons hastened, with me in tow, straight to the gorilla cage. When they got to the fence Martin picked up the tiny Osa and set her over on the other side. Up to this point the gorillas had paid no attention to her approach. But when Osa touched the wire with her hand, spoke in a gentle, friendly voice and whined with her lips tightly shut, Mbongo and Ngagi were galvanized into action. Mbongo rushed to the fence and, looking right into her face, whined back. They kept up these soft gentle sounds for several minutes. Then Osa touched the heavy wire of the cage and Mbongo stuck out his great, thick lips as far as he could, caressing her hand ever so gently with them, continuing his delighted sing-song whining. Although Ngagi remained aloof, he looked on anxiously. It was evident that both gorillas recognized and remembered the Johnsons and parting late that night was mutually reluctant.

Soon everyone began to notice that the two gorillas were singling me out from everyone else as an object of interest, so I redoubled my efforts to make friends with them. And when they finally accepted me with an undoubted air of

equality between us, I was flattered beyond all reason. But after the Johnsons' visit we decided that, except in case of emergency, we should never enter their cage. Not because the two of them appeared vicious, but because the minute anyone stepped into their private enclosure they were at once put on the defensive and we could not know what their reaction would be. Our plans for dealing with them were laid out then, and there has been no deviation. They were to be allowed as much freedom from human interference as they could be given; they were to be treated like gorillas. By this experiment that has never been tried before, we hope to have them live out a natural span of life in captivity.

Last spring, when the Ringling Circus started out on the road with their much advertised gorilla, a man came to me and told me he could make a million dollars for us in a year if I would let him handle our gorillas for publicity purposes. He considers me a perfect fool because my answer was 'But we would probably lose our gorillas.' I am not at all sure that a million dollars would buy two more gorillas like these. This is the first time in all the years and with all the money that has been spent to capture gorillas that two of the size, species, and character of Mbongo and Ngagi have ever been captured. To us they are beyond price.

It is impossible to picture a gorilla to a person who has not seen one, for you cannot convey, either by word or photograph, the tremendous size, the impression of great power and reserve of both moral and physical strength which they manage to convey to you. I have had little patience with the humanizing of animals in a sentimental way, but there is something about gorillas which creates in everyone a strangely different feeling. This is not entirely their rarity, nor their near-human appearance, but something inherent which grows gradually upon everyone until some of our most objective scientists have become almost as foolishly fond of them as I frankly am. Once, when they developed colds, our veterinarian, our head keeper, and I each returned after dinner and stayed almost all night with them, not be-

cause of their value but because of their complete dependence upon our efforts to help them.

They are great babies if they have any little physical upset and immediately let us know that they are ailing. These occurrences have been so few that we have come to regard them as very healthy creatures, but apparently they have no resistance to any human disease and the fear of human contagion is always uppermost in our minds. In spite of the statements that gorillas are gloomy, morose creatures, I am strongly convinced that ours are happy. They play naturally, having gorilla companionship; they evince interest in their surroundings, and are showmen in every sense of the word. Especially they enjoy a crowd of laughing, clapping children, and will exert themselves vigorously to stimulate applause and laughter. But they are set in their habits of living; any innovation, such as a change in sleeping quarters, diet, or keeper is resented for several days.

I have seen Ngagi pout for a day because he has been ridiculous. But like Mbongo he loves a laugh when he is trying to be funny and he really does try. He will climb to the top of the cage and, bracing his feet on the steel beams four feet below the very top of the cage, hang almost upside down, beating his chest or clapping his hands, shaking his great head at me, and obviously seeking to keep all of my attention to himself.

Once when Osa Johnson was here, Ngagi refused to permit Mbongo to come near the wire where she stood, but appropriated all her attention. Mbongo sulked at a distance a few minutes, and then deliberately mounted a huge wooden ball and, standing on it on all fours, rolled it across the cage, obviously showing off. Once he stood erect beating his chest and keeping time with prancing feet upon the rolling surface. Suddenly he dropped to all fours again and worked the ball faster and faster, all the while watching Osa to see if she was getting a good view. Alas for pride! He forgot to pay attention to his direction and suddenly collided at top speed with a great stump and over he went. We roared with laughter.

Photograph by Rogers

An early close-up of Mbongo

Photograph by E. H. Bol

Food for thought—Mbongo

Photograph by E. H. Boldrick

Classic dignity—Mbongo

Photograph by E. H. B

A close view of Ngagi

There is only one animal I have ever had look straight into my eye without flinching; that is the gorilla. Mbongo and Ngagi have beautiful eyes, large and dark-brown, with long, heavy, and curled-up lashes, and often when I put my face down close to the wire of the cage one will put his face so that it touches the wire on the inside and study me, looking into my eyes with a steady, questioning look as a person might. I wish I could interpret that expression, for it seems friendly and interested, yet it always withholds something I seek.

Once when I was sitting close to the wire taking all sorts of liberties with Mbongo, I pressed the side of my face tight against the outside of the wire as he was doing on the inside. He reached quickly through and touched my face with his finger. Finding that I did not resent the familiarity, he became bolder and suddenly, sticking out his big red tongue, he quickly touched it to my cheek. It may have been inspired by curiosity as to how I tasted, but as they are very cautious about what they put into their mouths I preferred to interpret it as a caress. I had thought I was all alone in that part of the zoo, but just as Mbongo withdrew his tongue, a little embarrassed by his own boldness, a small lad, unobserved till now, called out, 'How did his tongue feel, lady? Is it rough like a dog's?' No, it was just the cleanest warm tongue and, like his lips and the skin on his black face, as soft as velvet.

During the months following the first visit of the Johnsons, Ngagi still refused to permit anyone to approach him closely, but Mbongo was exceedingly friendly and taught me

several games, which we played over and over. The keeper said to me one day, 'Ngagi likes you, too, and watches every move you make.' I did not let this tempt me to force myself upon him, however, but I always spoke to him and offered him his share of any treat I took Mbongo.

One day Ngagi came close to where Mbongo and I had been playing and, pushing his arm against the bars, looked first at my hand on the shoulder of the smaller gorilla and then at his own shoulder. I had tried once or twice to touch him, but he had always walked away and sulked. This time I waited. He kept edging a little closer until he was so near that I just slipped my hand from Mbongo's arm to his. His face had been half turned towards me, but at my touch he looked away and kept his face turned so I could not see it at all. He was very tense. I rubbed my hand firmly down the great arm, then across his shoulders. Finally I slipped it down to the elbow. Mbongo is very ticklish at this spot so, thinking Ngagi might be, for the first time I really took hold of his arm, closing my fingers tightly around it. When he felt the pressure of my fingers, his natural caution began to assert itself. I spoke softly but firmly, just saying his name. To tell the truth, I was so excited that my voice was very husky and I felt as though my tongue were much too thick. Hearing my voice, he turned his face directly towards me and looked straight into my eyes. Then he heaved a great sigh and relaxed against the steel bars of the sleeping room. His big, black face was covered with great beads of sweat, and I realized how much greater had been his victory than mine and how difficult it had been to overcome his reluctance to human touch. I felt the humility that we experience only on a really great occasion. Mine was the first human contact the great gorilla had ever received without fear and resentment.

Ngagi is terribly jealous of my attentions to Mbongo and at times even resents my touching him. But I have made it a point to divide equally whatever I give them and Ngagi usually seems to understand this attitude.

Mbongo and Ngagi, the 'Greatest Show on Earth'

Recently Mbongo injured his foot. To keep him from walking on it, we confined him in the sleeping room, and, to make his days less monotonous, I frequently took him bits of fruit and other delicacies, and spent a good deal of time in the back of the sleeping room, entertaining him.

Ngagi watched closely to see that Mbongo did not get more than his share of food and particularly that he did not get too much attention from me. One day I took in a watermelon. After giving half to Ngagi I went on to the sleeping room, where I gave, perhaps, the lion's share to Mbongo, and stayed on to pet him in order to get a good chance to examine his foot.

The sleeping cage has a skylight and had been opened wide so that Mbongo could enjoy, to the full, sunshine and fresh air. Suddenly I had an uncomfortable feeling that we were being watched. I glanced up. There, above the solid front wall of the cage, peering down through the skylight, was the huge black face of Ngagi. He had crawled up the heavy wire, worked his way across, and was seeing for himself just what was going on behind that closed door. I spoke to him and he climbed back, a little sheepishly. But all the rest of the day he refused to come to the wire and be petted because I had given Mbongo too much attention.

The gorillas had not been in San Diego very long when I discovered that they were very clothes-conscious and that if I had on anything strikingly different in colour than I had been wearing they liked to reach through the fence and touch, smell, and taste it. One day I went in with a black cloth coat trimmed with black fur and they were obviously much excited over that. I stood very close and, as neither of them had ever attempted to injure my clothes, I have never hesitated to satisfy their curiosity about them. Mbongo touched his fingers to the rough black cloth and then smelled the finger. Finding nothing startling, he pulled a bit of the hem towards him and touched it to his lips. When I sat down on the cement base of the cage so that the fur collar came within his reach, he reached through gently and put his fin-

ger on the fur, first just touching it and smelling his finger, but finally pushing it back and forth with much the same motion he uses on the rare occasion when he grooms his companion. He was so simple in his action and so sure he was completely within his rights!

Beads, pins, buttons, my rings, and particularly my glasses are matters of great curiosity, especially to Mbongo. He has pushed the end of my nose and touched my lips, rubbed the tip of a finger across the lens of my glasses, touched my hair, pulled at it a little, and once he took my hat away, but never has there been anything vicious or treacherous in his manner. Not when he has run towards me and struck the wire with both big open hands, dancing on both feet, the corners of his mouth drawn down the while; not even when the big doubled fist, swinging around loosely at the wrist, menaces me as I sit against the wire, does it imply anything more than a desire to play with the same friendly roughness that characterizes his association with Ngagi. And when he treats me thus, I am happy indeed, for I know he has taken me into the rare, small circle of his equals and looks upon me with very little condescension, as a somewhat pale and colourless gorilla, perhaps, but still a gorilla, I hope.

One afternoon I returned to the zoo rather late from giving a talk to a woman's club. It was long after closing time and the zoo was very still. Now and then some nocturnal animal made a weird noise that I had never heard in the daytime and could not exactly locate or identify. It is a lovely, strange time to be alone in the zoo. An impulse which I did not hesitate to obey prompted me to drive down by the gorilla cage and see how they would react to a visit at night. It was very dark inside the cage and I had to return to my car for a flashlight, but before doing that I spoke, calling both gorillas by name to let them know who it was that disturbed their privacy. As I came into the cage, I turned the light up gradually from where I had focused it on the floor until I could see them and they could see me. So confident had they been that this unusual visit meant them no harm

that neither had taken the trouble to change his position or arouse himself from the bed he had made himself on the floor of the cage.

I had read about gorilla nests in the wild; I had seen pictures of them and had heard them described and commented upon by scientists who had spent considerable time following gorilla trails in the Belgian Congo. The great pile of clean oat hay upon which they had been bedded down had been divided quite fairly between the two gorillas. They had been in the habit of having their supper distributed to them on opposite sides of the cage and each had built his bed on the side where his supper was served. Mbongo was curled up more on his stomach than on his back, and as he raised his head enough to look at me he put both great fists up under his chin in a most childlike manner. Mbongo's bed was quite round and symmetrical with the edges built up a little higher, as though he had, as he sat eating, pulled the straw up around him as far as he could reach. Then, keeping his knees up against his big, fat stomach, he had settled down for the night.

Ngagi, however, had been very careless and untidy in the building of his bed, which was more of a couch. He was lying flat on his back with his hands on his chest, his hips close to the wall of the cage, his short, heavy legs at right angles to his body, his heels raised against the wall. He did not put down his feet, but tipped his chin up high in the air and looked at me over his heavy eyebrows with a wondering expression and something not quite friendly in his regard. He was evidently much more suspicious of such an intruder than Mbongo was, but when I spoke the second time, he seemed to take for granted that my visit was entirely friendly and he dropped his chin, whining to Mbongo in a low tone to reassure one who needed no reassurance.

Suddenly Mbongo seemed to sense that they were lacking in hospitality. Raising himself on his elbows, he greeted me with a series of notes that I have never been able to describe —something between a purr, a grunt, and a chuckle. Then

he stretched out his fingers through the bars and allowed me the rare privilege of taking hold of his five big fat fingers in my two hands.

This was not the only time I visited these two gorillas unexpectedly when everyone else had gone away. I never found them in the same position twice. I have found them sleeping close together with their arms over each other's body. I have found them with their backs to each other as though they might have had some sort of childish dispute before going to sleep, and more recently I found that the taller and more dominant gorilla had usurped the greater part of the bedding and that Mbongo had to do the best he could with what was left. But the mutual excitement of my first visit was never repeated. Both gorillas seem to realize, as they live longer and longer in our zoo, that this queer woman may do almost anything at almost any time.

Shortly after we received our gorillas, we read of the great weight that a gorilla in the Berlin Zoo had attained in a comparatively short period of years. We were anxious to have ours make a normal gain, but to keep them active and hard-muscled. This is always a problem in comparatively small enclosures, where food is brought to them. They have limited companionship and nothing compels them to be active or alert. We tried to devise several ways of weighing them, but finally had to discard our hanging scales, which we had strongly hoped might prove efficient. Then one day we released the wire on the bottom of a tall door leading from the exhibition cage into the safety cage in the rear. Through this opening we inserted the platform of our warehouse scales, with the arm and balance extending up outside the gorilla cage. We had no idea what they would do with it or if we could get them on it successfully. But when the two came out in the morning, they immediately walked over and looked at the new apparatus. I stood inside the safety cage with a pan of assorted fruit. I held out a tempting peach and Ngagi reached for it. Then I held another high above the scales. Without hesitation he stepped upon the platform and

when he had taken both hands off the wire of the upper door I gave him the fruit. I touched his fingers so he would let loose again and when he did, I gave him more fruit. He stood patiently and very still while we got our first accurate weight. But it was more difficult to get the playful Mbongo on the scales, and when he did get on he sat down on the platform, with his feet on the floor, as soon as he felt it move. Eventually we coaxed him into taking his feet off the floor of the cage. By this method of weighing we have kept an accurate quarterly record of their gain in weight. Our first weighing revealed that there was exactly twenty-five pounds' difference between them. As this was maintained through several weighings, Mbongo must have weighed 122 and Ngagi 147 pounds on arrival in October 1931.

At the last weighing in process, in May 1940, Mbongo had passed Ngagi, due probably to the latter's leg injury, which bothered him for a time. Mbongo weighed 602 pounds while Ngagi weighed 'only' 539 pounds; this in spite of the fact that Ngagi's five feet eight inches is about two inches more of stature than that of the heavier gorilla. Gargantua weighed five hundred pounds at his last weighing in.

The process of weighing is exceedingly popular with both, especially Ngagi, who walks directly to the scales and sits on them until we make him get off. Mbongo still clowns, standing on them with his hands on the ground and his rump in the air, or he will slip one hand tightly up against the wire to try to fool us. Don't misunderstand. He doesn't know he is being weighed, but he knows as well as we do that we want him to keep his feet off the ground and his hands off the wire and sit or stand still on that small unstable platform. When he does that, he gets something very good to eat, but we play with him and tease him and have a great time getting him weighed, and once or twice he has fooled us and didn't get weighed.

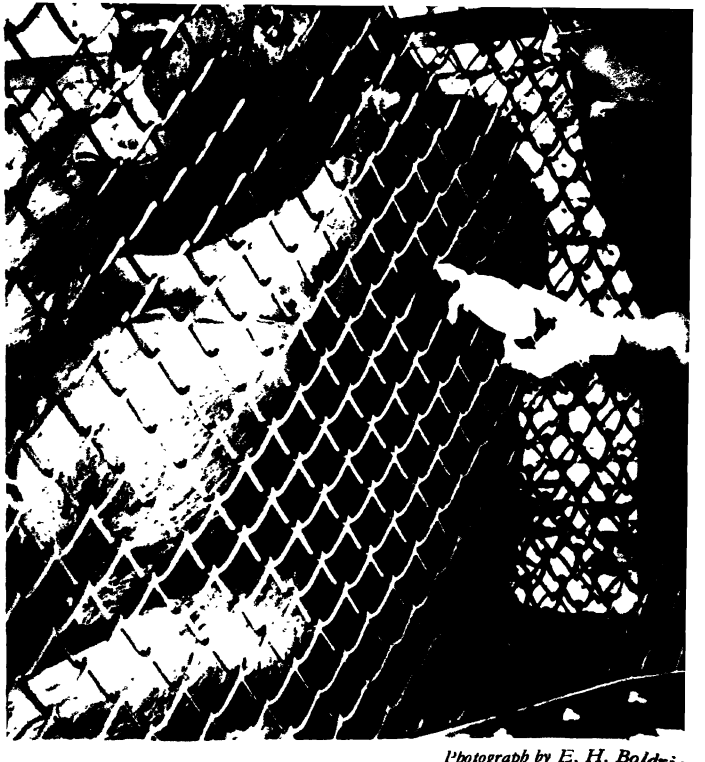
I frequently go into their house when they get their dinner and are being shut up for the night. To me it is the show of shows; for then they are not on exhibit; they settle down to

enjoy the privacy and their rest with only each other. Their whole world is bound up in that small area and their mutual interest and affection never diminishes. Each has his corner. A pile of evening food, amounting to about ten pounds of fresh fruit and vetegables, is put on each corner shelf close to the floor. The cage is half filled, it seems, with clean fresh hay, and they settle down with sighs and grunts of contentment. Ngagi is always on Mbongo's right and carefully watches everything that goes to the other gorilla. Like all wild creatures, they select their food in the order of their choice, but Mbongo skips back and forth, shoving a few bananas deep under the straw for later munching.

He sits down and spreads his feet wide apart, bending forward until the great paunch rests upon the springy bed of hay and, leaning on his elbows, he eats with whines of satisfaction which his cagemate answers. I have never heard sounds more expressive of satisfaction and contentment—a sliding scale of tones gentle and intimate. Do gorillas communicate? Of course they do. All animals communicate; a rooster warns his flock of danger, and so on. But do they speak a language? No more than any other animal does. Words spoken by man are his own invention; the simple savage with a few words conveys perhaps a very little less than do we with our thousands. The spoken words of birds are merely imitations, but if the gorilla has the muscular machinery of words, it must still be that he lacks that mental power which is the first necessity of the spoken word.

I have had a most interesting opportunity to learn something about how to interpret actions and activities of the great apes through brief association with men seriously and scientifically engaged in the study of them. But I am still of the opinion that our ability actually to gauge the intelligence of most of these wild creatures is based largely on the intelligence of the individual making the observations, and I have never felt yet that a statement of comparative intelligence of great apes, or any other animals based largely on the study of a few individuals, is a fair comparison.

Photograph by E. H. Boldrick



Photograph by E. H. Boldric

Mbongo and Ngagi, the 'Greatest Show on Earth'

In our zoo we have all four of the anthropoid apes housed in similar cages, left to their own devices and treated with the same consideration. They are fed and housed naturally and provided with natural companionship of their own kind. There is often a difference of degree of intelligence between two individuals of the same species that is astounding. Our gorillas apparently are not interested in anything of a mechanical nature. When we put impediments in the way of their doing what they desire, they appear to lose that desire. At first this deceived us all, but one day when we had left a gorilla shut in for a particular purpose, the other one that was outside walked over to the door, which had confined them for a period of six years without being padlocked or held in place by bars, and, pressing his hollow palms flat against the door, pushed it up to the top and held it there until the other gorilla had walked out. Then, withdrawing his hands quickly, he let the door drop and walked away with no further interest in his feat.

I have seen chimpanzees open a door by beating and striking, pulling and shoving, turning it back and forth, and apparently having no conception of what any of their movements have accomplished, but finally forcing or breaking it open by sheer strength.

Our gorillas have never attempted to imitate our actions, as chimpanzees will. Orang-outangs are not so imitative, but are natural engineers, taking anything apart that is not in a solid piece. They understand the principles of leverage. I have never seen one that did not. Recently Ngagi obtained from some unknown source a short piece of reinforcement steel. He carried it around and, except for our fear that he might accidentally strike Mbongo with it, we felt that there was nothing dangerous in his holding it. After a while, he lost interest in it and dropped it within easy reach of the outside of the cage. The same weapon in the hand of an orang-outang would have been used immediately to pry the wire off the cage.

Chest-beating, which is the most characteristic of all

gorilla sounds and movements, has been described and interpreted by everyone who has been fortunate enough to see a gorilla in the wild. I have watched gorillas, two of them, beat their chests in every different tempo and position. It is the most fascinating and interesting of all their activities. When they are feeling full of life and animal spirits and must give some voice to their exuberance, they stand erect or climb up on some low shelf or log and beat their chests with a rapid movement of the open hand that even the fastest motion-picture camera does not record without a blur. As they beat, they dance, particularly Mbongo, sometimes with both feet leaving the ground at once, in perfect rhythm to the drumming on the chest.

Most of the reports had led me to believe that a gorilla beat his chest with a closed, clenched fist—his mouth open in a scream of rage—when he was preparing to charge or was in great anger. The resonance and volume of the sound is made not by a hollow chest but by the hollow palm of the great hand. At times they beat with both hands in unison; again with first one hand and then the other. I have seen them sit flat on the floor with their legs stretched out, feet far apart, and beat alternately upon the sand in front of them and upon their chests, sometimes with both hands in unison, sometimes with the hands alternating, one upon the sand and one upon their chests. I have seen them express what appeared to be every emotion but unhappiness or anger by this chest-beating—lazy contentment by the slow beating, happy excitement by rapid beating. They almost never beat their chests at the same time.

Besides beating their chests, the gorillas beat almost everything else, for instance, a rapid tattoo upon the door of their sleeping room, pausing just long enough for them to run to let their keeper know that they believe it is dinnertime. They stand erect behind the oak tree in their pen, circling it with their arms and beating rapidly upon each side. Ngagi often climbs high up on the top of the cage and, standing with his back in the corner, leans over as far as he

can, his great feet braced on the wide steel beam, and hangs his head far down below his feet and, raising his great hands, beats rapidly upon his now hairless chest. He seldom does this unless I am present. The keeper says he does it to attract my attention away from Mbongo. At the same time he will shake his head and growl low in his throat, with his big mouth loosely open, being very agreeable, playful, and ingratiating to one he seeks to attract.

The gorillas express their emotions by clapping with the resonant noise we all know how to produce. Their hands are not the long-fingered, supple-palmed hands we have seen on the orang and the chimpanzee, but large, solid hands with about the proportionate length of finger of the human hand except for the smaller thumb. The palm is broad and quite concave, perhaps from the constant walking upon the second joints of the bent fingers. I slipped a foot rule into Ngagi's loosely closed hand one day and found it measured eleven inches in width. Their fingers fill the space between the wires of two-inch fencing, their nails are blunt and worn, but they can pick up a tiny seed or bit of straw no larger than a pin between the finger and thumb.

They pat the soles of their feet as well as their chests; lying on a shelf or the sandy floor, their short, heavy legs elevated at right angles to their body, they raise their longer arms and beat upon the soles of their feet. The rhythm, as always, varies with their moods. Occasionally they swing their feet towards their head and clap first their hands together and then beat upon the soles of their feet in alternate motions. As they have grown older, however, these two childish pattings are being gradually forgotten.

They consume about thirty pounds each daily of fresh fruits and vegetables. This is divided into five meals, with the heaviest meal at night when they go to bed. I could not believe that any animal could learn so quickly the source and time of his food. Long before we realized what they were doing, they would climb up in the top of the cage and look with longing eyes into the east. Suddenly they would burst

into great activity, climbing down and running around and around the cage, tagging each other and beating upon the door. Always during this playful interval I would see that the keeper was approaching with their pans of food, and then it dawned upon me that they were watching the green gate in the monkey yard because in the storeroom inside this group of cages their food is prepared and through this green gate their keeper comes, bringing their pans. No matter how many times he comes out with pans belonging to the other *apes or monkeys, the gorillas pay no attention, but they* know their own the second they see them.

I have made many interesting tests on the gorillas, partly because we were so interested in what their food habits night have been in the wild and partly because we were anxious to supply all of the elements that they required to keep them in the best of health. We wondered if they might not be in the habit of eating grubs or insects. We have many times taken them meal-worms, crickets, angle-worms, and grubs as well as squabs and pieces of raw meat. They look at the worm or insect, feel it with their fingers, and either crush it into the sand or let it lie indifferently. If it moves they may touch it again and push it around a little until it works its way underground. I have seen Mbongo touch such a creature, then lift his finger very gingerly to his nose and smell it, but he has never put the insect or larva up to his face or mouth.

One day someone came to my office to report that a little half-grown bantam pullet had crawled into the gorilla cage through a drainpipe. She was not at all afraid of the gorillas and permitted Mbongo, who had walked over to her, to pick her up. Ngagi, too, was interested but did not offer to touch her. When I arrived Mbongo was standing with the bantam in his hands and Ngagi was grunting a little with his face close to the chicken. He was not, however, interested in it as a possible food. When I spoke, Mbongo gave the chicken a little toss. She was still not frightened in the least, scarcely moving from Mbongo's feet. He picked her up and

this time tossed her a little farther. He had found a new playmate.

Going to the rear of the cage, I opened the door into the sleeping quarters and called them in. Such a call at that time of day was most unusual and they came to me with alacrity, certain of a rare treat. The keeper dropped the door behind them and entered the cage. He had much more trouble capturing the hen than the gorillas had. Not a feather was missing or out of place.

One Sunday morning the man in charge of the gorillas called me and said, 'If you want to see a great show, come to the gorilla cage.' When I arrived I found that Mbongo had captured a great brown rat and was holding it by the tail, dancing around in a frenzy of pleasure. Suddenly the rat swung himself up and gave Mbongo a little nip on his finger. Mbongo shifted the rat to his other hand and stuck the injured finger into his mouth in a most childlike manner. Then, lying down on the floor with his treasure held close to his face by the tip of its tail, he began to examine it. Ngagi now climbed down off the shelf and sprawled on the other side of the rat, his big black face just as close to it as was Mbongo's. The rat lay perfectly still between them, showing that the touch of his captors was not painful.

When the examination was complete Mbongo allowed the rat to crawl up his arm almost to his shoulder, but as it approached his face he shuddered, dragged it off his arm, and carried it by its tail over to the pool and ducked it. Two or three times he pulled it out of the water and dipped it in again. Then he turned it loose in the water. The rat, as it rose to the surface, started to swim. Mbongo leaned over the rim, spread one huge hand on each side of the pointed nose of the rat, and, beating upon the surface of the water with all his might, created a small storm. The rat sank to the bottom until the disturbance had subsided, then came up. Delighted with this hide-and-seek, Mbongo again beat the surface of the water into a turbulent froth, and again the poor rat sank. There was nothing vicious in this play. For all Mbongo

knew the rat was enjoying it as much as he was. Time after time the miserable little creature struggled to the surface and tried unsuccessfully to climb the steep, smooth wall. Finally it sank and came up no more. Mbongo waited a reasonable length of time, and dipping both his hands into the water stirred it up. Finally he brought into view the most dilapidated carcass I have ever seen. Mbongo released it and it sank from sight. Being a good sport, Mbongo gave the rat two more chances, and then no longer interested, turned to walk away just as the head keeper, having heard the excitement, came over. Mbongo turned back to the pool, fished out the dead rat, carried it to the corner shelf close to where the keeper stood and again indifferently walked away. Careful examination showed that not one bone of the rat had been broken and that he had no abrasions of the skin. Death was due to drowning.

A little later in the summer the tables were turned on the gorillas. A desert tortoise pushed his way out under a loose fence surrounding the tortoise pen and wandered into view near the end of the gorilla cage. When Mbongo saw this crawling monster coming his way, his first reaction was to climb on to a high corner shelf in the end of the cage and stare, hair standing on end along his neck and over the crown of his head.

Ngagi strolled over to see what was alarming Mbongo. When he saw the tortoise, he showed even greater alarm and ran to the opposite end of the cage, grunting and snorting. Mbongo became more excited by Ngagi's actions. The innocent tortoise, entirely oblivious of the consternation he was causing, crawled slowly under the guard fence surrounding the gorilla cage, along the edge of the cage and into a heavy growth of bamboo just beyond their pool. When he was still so near their cage that he was concealed from them by the foundation of the cage, Mbongo and Ngagi climbed slowly along the front wire until they could see him as he made his slow progress. As he edged along, they followed him at a safe distance about fifteen feet above the floor. For a long

time after he disappeared, the two gorillas remained with their eyes glued on the place he had entered the shrubbery. Finally, making up their minds he was gone for good, first Mbongo—the brave—and then Ngagi—the cautious—climbed discreetly down and, inch by inch, ventured over to their pool.

Happening to arrive at the gorilla cage at this moment, I was immediately struck by their tense attitude. They were standing with their faces pressed to the wire at the back of their pool gazing into the shrubbery. I went around on that side and could discover nothing alarming. I spoke to them, but they paid no attention. 'What is the matter with these two gorillas?' I asked suspiciously. 'Has someone been teasing them? Why are they so upset?'

Then a visitor told me the story of the tortoise. A little boy had seen the tortoise wandering across the road and down the hill behind the cage. I walked in that direction and sure enough, sliding down the steep hillside, was a twelve-pound desert tortoise. I picked him up and carried him back over to the gorilla cage, scarcely believing that such a harmless, innocent creature as a land tortoise could have caused such consternation. They showed me plainly they were alarmed for my safety. Both backed away, scowling and grunting a warning of danger. Mbongo especially seemed fearful of the consequences of my rashness, which caused him to ignore his own danger and come towards me whining and grunting, taking first a few steps in my direction then backing up to indicate his reluctance to come in contact with such a creature.

I sat down on the jutting foundation of the cage and putting the tortoise on the ground between my feet held it there where they could not see it. Mbongo immediately came over and tried to see where it had gone. Failing, he climbed up on to the lower shelf and then to one just above my head. When he reached this shelf, I picked up the tortoise and held it in my lap, touching it with my finger and holding my hand up to him. But he would not permit me to touch him with that

hand. Meanwhile Ngagi too had come near us, but Mbongo was too engrossed to notice his approach. Ngagi reached up and touched him lightly on the leg. With a scream of terror he leaped backwards clear over Ngagi, landing in a heap four or five feet from the corner of the cage. It was the one and only time I have ever heard such a scream or seen a gorilla jump. They are usually too conscious of their great weight to let go of one thing until they have a firm hold on another support.

Day after day for eight years I have watched Mbongo and Ngagi. I have seen much that is very human. Yet I always feel distinctly the wide gap which separates them from the lowest and most savage forms of man. They have never lost any of the interest and fascination they had for me when they first came. And sometimes I feel as though I knew no more about them than I did that first day when, innocent, round-faced, wide-eyed children, they entered into our lives and hearts.

Our constant observations have both confirmed and contradicted conclusions of famous scientists who have worked upon them and followed them in the wild. We have answered many of the questions to which everyone previously had to say, 'I do not know'. But there is much more to be learned about the gorilla, and until a young one is born and lives out its span of life in captivity under such observation as is now being given to chimpanzee families in the Anthropological Station at Yale many questions will remain unanswered.

You will always find a crowd at the gorilla cage. Walking past I am often stopped by friends or strangers with eager questions they hope I can answer. But instead of answering questions I soon find myself making a speech, for I know so well just what they will ask. No matter how much I tell them, the crowd grows as long as I will stay. It is more than curiosity people feel towards gorillas when they will stand for hours watching them. The gorillas seem to sense this, too, and try to contribute something of a show, for they are always much more active when there is a big crowd.

ph by Frank Preciado

Nyagi balances and swings

Maggie, an orang, plays nursemaid

PART 5

Family Secrets

CHAPTER XXII

The Mystery of Parenthood

One of the objects of a zoo is to teach children to use it and thus learn to understand and love wild life; and every member of the staff, especially the head, should be prepared to answer questions intelligently, particularly about the animals on exhibit. That is why the family life in the cage is especially important to me.

To-day there is nothing more closely associated with the educational work of our city than this zoo. It is dedicated to the children; the Society is trustee for the children. The greatest reward of those five generous-hearted men who started the zoo and carried it, alone, for six years is the happiness and laughter of the little folks who run freely and safely along its paths, feeding their friends, shouting at their antics, and unconsciously learning the greatest lessons of life, in the most natural way in the world.

Recently the Brownie Scouts held their annual revel in the zoo. Two hundred and fifty little girls, some in uniforms, others in slacks, most of them with a few front teeth missing, girls with curls or tiny pigtails, followed the arrows around the entire zoo and saw the new babies and carefully watched the animals so that after their picnic lunch they could model their favourites out of salt and cornstarch clay.

From the mountains of our back-country and the crowded districts of the city they came, singing their troop songs while I walked around judging and awarding banners. Every animal in the zoo was there—a kangaroo with a baby in her pouch, rattlesnakes, turtles, elephants, monkeys with babies in their arms, seals, and camels.

But before this, while all were seated at their forty big picnic tables, I sought the President and founder of our zoo. He was eating lunch in the café. I invited him out on the pretext of showing him something. We drove by the riot of colour and the humming of childish voices. He didn't say very much, but his eyes glistened with the joy of seeing the zoo, his life work, his only hobby, fulfilling its primary object: 'To instil in the hearts and minds of the children of this community a love for and knowledge of the wild animals of the world.'

Another and much more specific value to be gained by a zoo head in watching the life and seeing the happenings in which he has no part—family secrets of courtship, birth, life, and death—is derived from the fact that there is no better preparation for coming events and the prevention of catastrophes. When zoo directors chide me at the conventions for mothering my animals and claim that that is why we have so many babies in San Diego, I plead guilty. I have learned to mother these mothers and their babies because, by sharing family secrets and making mental notes, I know when all is well and when I'd better do something, and do it quick.

Visitors always seem surprised when they find that any wild animal gives birth to a single young. They seem to forget that multiple births among horses, cattle, sheep, and goats are the exception. But when two or more children are born to any mother they make a very popular exhibit.

Baby wild pigs in the zoo are usually born in pairs or singly; we have never had a large family. Among any of the great cats, except the lions, two or three at most is the rule. In the lion family three babies are an average litter, four are not uncommon and five appear on rare occasions. The smaller carnivores have large litters, in fact, now and then, almost as large as our domesticated cats and dogs. The Virginia opossum often has a family of nine or ten or even a dozen. These small, mouselike babies crawl through the long fur of the mother's abdomen to find an incubator equipped with

many nipples in the abdominal pouch. There they cling while they grow their fur coats and get their eyes open. They emerge at the age of two months—cunning little furry balls, with long noses and mouths filled with sharp teeth, not at all the new-born opossum most people think they are.

The new baby kangaroo is a wormlike, embryonic creature not over two inches long. The head and front legs are large and somewhat developed while the rear part of the body is only flesh. Pulling with its white front legs and twisting its ungainly head from side to side, it also finds its way to the mother's pouch, and there becomes attached to the nipple, which expands to fill the baby's mouth so completely that it cannot release itself for several weeks. The first glimpse that most people have of a baby kangaroo is of a two-months'-old, grey-furred youngster that hops in and out of his comfortable, portable home at will.

Early in my career we received a shipment of European glass snakes. The bill of lading said 'two'. I peered in the box and saw two—no more than two. They arrived early in the morning, but their box was not opened until late afternoon. It was not disturbed meanwhile. When the reptile man opened it, he looked at me with astonishment and asked, 'Did you say *two* snakes?'

'Yes,' I answered.

'Well,' he laughed, 'take a look!'

The bottom of the box was covered with tiny snakes about eight inches long and a quarter of an inch in diameter, silvery and very beautiful. There were forty-two.

Every once in a while since then we have had other surprises in our reptile house. One of the nicest was three little red rattlers born of parents that had been in the zoo for several years. They are now past three years old, splendid snakes, almost identical triplets. We named them Red, White, and Blue, but owing to the quick temper one manifested early in life it is now called Hot, not White.

For years we tried to obtain good specimens of the very poisonous Fer-de-lance. They always arrived in such poor

condition that we had no chance to do anything with them. Two years ago, however, one of the Hancock Expeditions brought back a beautiful large female in fair condition. She had refused to eat aboard ship, but that was not too alarming as she was fat and appeared healthy. Snakes can fast over long periods with apparently no ill result. One day soon after her arrival, Mr. Perkins, the keeper, opened the door to offer her food and discovered that she was the mother of thirty-three wriggling babies. He told her she should be ashamed of herself, that she was a fine large snake and might have been the mother of fifty-six! We now have four of these little Fer-de-lance almost two years old.

Little snakes born alive are actually incubated within the body of the mother and emerge into the world in a clear, thin wrapping like cellophane. As fast as each is born it tears its wrapping open and moves away, piling up with those born just ahead of it in corners, caring nothing for the mother, who is equally indifferent to them.

Among the higher animals the problem of birth is more complex and the number of offspring is limited. Our collection is famous for the number of baby monkeys and for the many species that are born each year, but only among the marmosets do we ever have more than one baby monkey born at a birth. The youngsters of the larger monkeys, especially the great apes, are so weak and require so much holding and protection that two would present too many complications for life in the wild.

We have had four species of marmosets born in the zoo and in each instance the babies have been twins. Marmosets are placed quite far down the scale of intelligence in most reports, but when it comes to family management and parental co-operation they are remarkable. The animals are so distinctly monogamous that a mated pair will not endure the presence of another animal of the same species in their cage. Our first young marmosets were discovered one morning when we went out to feed the parents their quota of five meal-worms each. Every marmoset is ready and eager for

this tempting breakfast, offered in a tin cup, and snatches it with greedy alacrity.

The two babies, well covered with long grey hair, were clinging with arms and legs to the back of their father. Their striped tails were wrapped around his abdomen and their heads were tucked snugly up under his long, thick grey ruff. Seeing that breakfast was at hand, the mother jumped to the wires and clung there, waiting for her worms, quite oblivious of any responsibility towards her babies. Meanwhile the father climbed laboriously down to a limb extending almost to the side of the cage. Balancing himself carefully, he finally jumped over to the wire, but it was several seconds before he relaxed his hold sufficiently to reach out one hand for his portion.

Later in the day the mother took one baby from the father and nursed it. During the process he was very much concerned and sat by, alert to any danger. When the mother handed it back, after it had been nursed, he permitted her to take the other one.

When the twins were three days old I witnessed a rare sight. It was late in the afternoon and I was making a last visit to the cage. The mother, with one baby on her shoulder, was hanging on the wire under the high shelf, absorbing the last warm rays of the setting sun. I could not see the father and surmised that he had taken the other baby to bed. Suddenly he appeared in the small, round doorway of his sleeping box, peered out, and looked all over the cage. He could not see the mother under the shelf. He darted back hurriedly, saw only one baby, came out again, and, distraught, ran wildly along the top of the shelf. Then he jumped to the tree and searched its branches, one by one. Down to the shelf he jumped again and dashed into the sleeping room. In an instant he was out again, plainly more agitated than before. This time he hopped to the floor, ran all around the cage, and then started up the wire directly under the shelf on which the sleeping box was built. The mother paid no attention. Suddenly he spied her, jumped up beside her and began

to talk. His tiny voice was loud, very excited, and so rapid were his syllables that the sound was like the chorus of tiny crickets. The baby, clinging to the far side of the mother, began to move slightly. Slowly it pulled itself up to the mother's back and neck. This brought it within the father's sight. His tone changed. Instead of being worried, it became shrill and angry. He reached over, grabbed the baby, pushed it on to his own shoulder, crawled cautiously down the wire and up the tree, jumped across the narrow opening to the sleeping box, and 'so to bed' with his other baby.

We might go on until we had covered every cage in the zoo, learning the story of preservation of the species and the story of reproduction in the way that nature tells it. The picture would unfold from the selection of mates to the birth and care of the young. You might not need the knowledge in your work, as I need it, but I am sure you need it in your living. So may I share with you the lessons of loving, living, and family life which can be seen in their entirety only by those of us who work in the zoo and, by lingering, can watch the course of our charges' daily lives?

CHAPTER XXIII

The Birth of a Gibbon

When Katie's baby, George, a chimpanzee, was three months old he was forced to share attention with a gibbon born in the next cage, an event which took us completely by surprise. On the very morning of his birth, 10th May 1938, I had taken the doctor to the cage where a pair of gibbons was exhibited and had asked him to take the female to the hospital for a complete examination. She had not shed her coat, contrary to habit, and, as she sat humped up, knees drawn under her and held in place with her long arms, appeared to be acutely miserable.

This particular pair of gibbons had been brought in by Mr. Perkins with a large shipment in 1936 and were so tame and friendly with him that without hesitation we put them in a big cage with ten other gibbons. Soon afterwards two of the ten gibbons were found so terribly lacerated that one died from loss of blood. We took for granted, at the time, that the two had been fighting with each other.

Then one day, as I stood close to the cage feeding some bougainvillea leaves to the gibbons, the female of the new pair came to the shelf and sat near the wire. All of the other gibbons fled at her approach, but she held out her hand to me in a friendly, gentle fashion. Suddenly her mate dropped to the shelf from high in the cage and struck me with lightning swiftness. I jerked back my hand without knowing he had hurt me, and when I saw blood spurt on to the floor of the cage I did not realize it was mine. I thought he must have slashed his mate with his long, sharp canines. Both dashed

away so quickly that I could not see what had really happened. Then a sticky, painful feeling in my hand drew my attention. The tip of the third finger of my right hand had been almost completely severed. From that time on neither of these gibbons seemed to like me when they were together. The female, when removed from the cage for a few days' observation, was as friendly and as docile as before; in fact, she showed preference for me. But the male has never permitted me to forget that he has a guilty conscience. His antipathy is not towards me entirely, but towards all women, and he uses many blandishments to attract them close to his cage that he may strike or snatch at them. We had felt, prior to this attack, that if either one of the new pair were the 'killer' it might be the female, jealous of her mate, but after the male's attack upon me I watched carefully until I became convinced that although she might provoke an attack he actually did the slashing. After that, we moved the new pair into an empty cage near the gorillas.

The gibbon is the smallest of the manlike apes, and his scientific name, *Hylobates*, means 'walking in the trees'. Most of the gibbon's life is spent in treetops, where he swings along with grace and speed at the full length of his highly developed arm. When he does come to earth he stands erect, running rapidly with arms extended above his head. His solemn face and big round eyes give him a gnome- or fairylike look.

But there was nothing fairylike about Gibby on this particular morning. She was a big ball of dishevelled hair and very unhappy. The doctor informed me that, not having seen her swing or play for several days, he had examined her stool but had been unable to find anything in it to account for her lassitude.

At one-thirty that afternoon a frequent visitor to the zoo burst unceremoniously into my office to exclaim, 'Mrs. Benchley, you have a baby monkey in the cage next to the gorillas!'

I didn't stop to ask questions. I just jumped into my car

and hurried to the cage. I could not have been more incredulous if he had told me we had a baby gorilla. He insisted that he had seen the birth and that it had transpired so quickly and quietly that even the motion-picture photographers from Hollywood, then at work on a sound film at the adjoining gorilla cage, had been unaware of it, thus missing the great thrill of photographing the birth of the first baby gibbon ever to be born in captivity, as far as we then knew.

When we arrived, we found the two gibbons on the floor near the centre of the cage. The male was sitting a few feet from his mate, ready to help, but not to interfere, with something that was strictly none of his business. Gibby had nearly consumed the placenta, and just as we drew near she handed a small final piece to her mate. He took it eagerly. The thin, fragile body of the baby was almost transparent, like a small, empty greyish-pink sack. Its arms and legs were not as large as a lead pencil; the fingers and toes were like pink matches. Spread out like the tiny transparent legs of a huge garden spider, they were tangled in the thick hair on either side of the mother's body. The baby was not held upright, as most baby monkeys are, but was lying almost horizontally just above the mother's loins.

Gibby herself was placid and calm. When her mate reached out and curiously touched the mite lying on her abdomen she did not strike him, but slowly turned her body until it was between him and the baby. Then she sat very still, as though exhausted. We gathered around to watch, wondering if the baby were mature. Suddenly it turned its big, round head until the face was towards us, and we saw that its skin was pink, the eyes wide open and black, and that a ruff of thick, soft hair surrounded its little face like an infant's hood. The body seemed to be naked, but wasn't, as we found out later.

By this time the excited cameramen were ready to 'shoot' the new parents and their baby. As though to oblige, Gibby stood up, raised her arms above her head, ran to the side of the cage, and hopped upon the shelf in front of the door to

the sleeping quarters with the greatest ease. She gave the baby no support at all, seeming to have full confidence in its ability to support itself.

The chimpanzees and gorillas in the cages on either side watched her with an excitement as great as our own. In the next cage, Katie, clasping George in her arms, climbed to the very top of her cage and began to scold and talk, plainly coaching the new mother. When her advice was ignored, she went back to the floor, filled her mouth with water, climbed up again, and spat towards the new child. The mother hurried with her offspring to another part of the cage. The gorillas meanwhile watched everything with strange fascination, occasionally breaking their silence and immobility with a huge grunt of excitement or a shove to push one another aside for an unobstructed view.

I watched until convinced that the precious baby could be safely left with its parents. Then I went back to the office to see what I could find in books about similar occurrences. All that I could learn, then or since, was that only two gibbons had previously been born in zoos. One was born in Copenhagen and lived only four or five days. The other was born in the National Zoo in Washington, D.C., and survived only twenty days.

Late that afternoon, when all the curious visitors had left the vicinity, the keeper slipped into the cage and walked softly to the shelf where the mother lay. Stretching out his hand slowly he touched the little body lying across her abdomen exposed to the cool air. Gibby, who had never before wished to have anyone take hold of her, unexpectedly held out her hand to him, and, when he took it, lay perfectly contented as long as he would hold it. When he was leaving he offered her a little milk but she refused it. This did not worry him greatly, because the placenta she had consumed was very nutritious. But when she refused nourishment next day and we had not seen her nurse the baby or try to do so we became uneasy, and took turns watching.

Late that afternoon, as I kept vigil, I saw a spidery arm

reach out and a hand pass through the hair of the mother's side up towards her shoulder. Bit by bit, the baby sought a perpendicular position and then tried to crawl up to the high mammary glands close to his mother's throat. When the little groping hands could pull the body no higher, Gibby stooped just a little, bending her back enough to bring the nipple within reach of the tiny mouth. The baby pulled lustily, and must have done so before because his technique was perfect.

Throughout the next several days the mother seemed very tired and weak, but there was nothing weak about the baby. He was wide-awake and interested in everything. He twined his long fingers in the thick coat of hair that his mother had retained in preparation for his coming and pulled so strongly that, at times, she was forced to untangle the fingers and move them to a less tender spot. When he was a month old we named him Primo.

By the time he was two months old Primo had cut his first tooth and was trying all sorts of things, principally to cling to the wire and pull away from his mother. When he was three months old he was actually clinging to the wire without support from her. When six months old he climbed up the wire in front of her and tried ineffectually to kick her in the face—his first attempt to learn to protect himself in a gibbon colony. She held him off good-naturedly, whereupon he climbed still higher. Then, resting on her head, he swung out, and in true gibbon fashion kicked his father in the face with both feet. The father scarcely knew what to do, but I felt like cheering, for he is the only 'enemy' I have in the zoo.

Primo's first trip across a bar at the top of his twenty-foot high cage was a great adventure. His tiny hands could not reach around the pole and so he hung on one side, at full length, slipping along, one hand behind the other, instead of hand over hand as his father and mother would do. The first time he worked himself across his little legs worked as hard as his arms, swinging back and forth just as they would in walking. He was then eight months old.

In May 1939 Primo celebrated his first birthday. It was an occasion of great rejoicing. Photographers were on hand because it was 'news' that a baby gibbon in captivity should have reached that age. He had, of course, been written up in many articles and stories, and his picture had been published in numerous scientific magazines and in university publications all over the world. On that morning he was remembered by his public, and even received a birthday card addressed to him in my care. The wife of the primate-keeper baked him a tiny birthday cake and put one candle on it. He stared at it with big round eyes until his papa grabbed it and gobbled it up, candle and all. A lollipop met with the same fate.

Until that day Primo was referred to by all of us as the Baby. Everyone knew whom we meant. Now, however, he apparently attained his majority. His mother put him on his own from that day forth, and he assumed his name of Primo.

At eighteen months Primo was as large as most of the young gibbons brought into this country by dealers and zoos. It has been very enlightening to watch him, and we have learned much that will enable us, and we hope other zoos, to be more successful with these beautiful apes in captivity. Before long, we believe that Primo will be referred to as the elder brother of a second gibbon whose birth we are anticipating within the next few months.

CHAPTER XXIV

The Courting Bower

Mother Nature, in her eagerness to preserve her species, demands that many children be born and resorts to many devices to stimulate sex interest among birds and beasts. The nuptial plumage of birds is one of the commonest and includes the lovely bridal veil, the gorgeous long tails of small finches, and the brilliant colouring of the strutting cocks of innumerable birds, large and small. But there are also subtle tricks to encourage mating, none more lovely and romantic than the building of the courting bowers by the beautiful 'satin bower birds' from Australia.

Year after year I have been amazed by the labour and skill required to build a bower in our cages. I have watched, with our two hens, the careful selection of location, sticks, and, finally, the decorations. In the wild the male would choose a nice open spot in his native jungle, where the ground is soft and level. Then he would roam over a large area to find the proper material for his bower. No hen would be sitting aloft to offer suggestions to distract his attention. The bower is the work of the male bird to help him win a mate.

In the zoo, the birdmen and I provide the building material—slightly curved, barren twigs no bigger than grass stems, from eighteen to twenty inches long, and limber. The male bird carries a good many twigs to the spot he has selected on the sandy floor and scatters them loosely around until he has carpeted an area two feet long and perhaps a foot wide. From this floor covering he picks up a few of the better twigs and stands them erect by sticking the larger end into

the sand until they form the two sides of an aisle seven or eight inches wide. In order to make the corridor substantial, the walls are built of many sticks of different lengths. They are crowded closely together until the wall is four or five inches thick. The concave side of the slender curved sticks is always turned towards the centre of the aisle, thus permitting the tips to meet in an overhead arch. Of the great armfuls I have carried up there day after day not half are used—they are too straight, or too rough, or too heavy, or too something else, and so are discarded or utilized only as second-grade material. Part of the way along the corridor the roof is open, in fact from the very beginning the fifteen-inch high bower resembles the grass dwellings of savages.

Finally, after several weeks, the bower is complete, but not quite ready for use. The aisle, open at both ends, is very lovely, with the colouring of soft bark, and its artistic creator is visibly proud of it. But it is not yet perfect. He studies it critically and decides to decorate it. In the wild he would pick up a few feathers—possibly pull a few out of his own coat; he would pick off small stems of red or yellow berries. These would be hung on twigs or laid upon the floor—wherever good taste indicated. He would also carry home a bright pebble or two with which to fill some bare niche. In the zoo, he uses bright ribbons and yarn, parrot feathers and shells, which I personally give him. Berries are scorned. Blue is his favourite colour; green he will not touch.

In the wild he would now go forth to seek a mate to be led into the bower. But in the zoo he takes his choice of two hens who came over with him from the Toronga Zoo in Sydney, Australia, in 1925. At that time the male was immature and could not be distinguished from the two green-and-grey speckled hens, who are smaller than crows and closely connected with the starling family. All three had eyes of an astonishing sapphire blue when seen in the sun, a colour very rare in the eyes of birds.

When the bower is commenced each hen becomes eager to be chosen. In fact, one is so indiscreet as to offer help and

CHAPTER XXV

The Bird that Dons the Bridal Veil

One of the most beautiful of the zoo's life stories takes place year after year in the shore-bird cage. Two large white egrets, through family activities, have built up a colony now representing several generations. One year I daily watched the marvel of their courtship and parenthood. Their elegant bridal adornment exceeds the trousseau of any bird. It is not given to mere man to create or display finery with the unconscious glory and the exquisite daintiness of these graceful birds.

When I came to the zoo there were two white herons in the great cage. I looked upon them with no more interest than I had felt when passing them by the roadside on my way to school when a girl. Late in the winter, however, I noticed that one was growing lovely egret feathers. There was a large, handsome cluster over the shoulders and wings, and another depending from the head. When folded down, these were scarcely visible. As I watched, the second bird approached the small bare branch on which the first was standing and, bowing with graceful courtesy, raised his gorgeous plumes until they stood erect, like a halo, around his head and shoulders. His mate returned this greeting with the same display. As they stepped back and forth bowing, I hummed to the rhythm of their mating steps.

Next day one of the birds carried a large slender stick, nicely balanced in his bill, to a tree where a number of such twigs had been so carelessly laid in the crotch that it had not seemed to me until just then even the beginning of a nest.

Soon the little litter of sticks became a platform and before long a gorgeous turquoise egg, then another, and another, appeared, all in imminent danger of rolling off and crashing to the ground.

Then one afternoon, while I stood by the cage, I saw the loveliest sight that I have seen in any family life. The parents had been sharing the long, uninteresting period of incubation most fairly, relieving each other for exercise and food. On this occasion, I happened to stop just as they were changing shifts. The bird coming on duty carried in his beak a slender twig that had taken real searching to find. As he poised just above the nest there was a little rustling, a mutter, and his mate rose to her feet. He hopped daintily towards her. Both birds bowed again and again, and the glistening halos of their erected plumes reflected the sunlight until I could no longer distinguish the individual feathers. Then, the exchange of curtsies over, he offered his gift to her. She took it, dropped it upon the nest, stepped gingerly off the eggs, and flew away for a welcome reprieve. Moving carefully into the place she had vacated, he turned the eggs over lightly with his beak, keeping each pointed end well towards the centre, and wove the twig he had brought carefully into the edge of the nest.

Day after day—occasionally several times a day—this pretty picture was unreeled. Soon I lost the fear that the eggs would roll off the unstable platform. Piece by piece a sturdy wall was being built along its edge. When the little ones were hatched, at the end of twenty-eight days, a secure home received them.

Now there was no time for ceremony. The mouths of the three little fat, homely, naked egrets were always wide open. At first the parent birds regurgitated a creamy, thick, predigested fluid—as much baby food as mammal's milk—into the open beaks. The growing birds required more and more food. The parents became increasingly busy. There was little time now even to pre-digest the small fish and give it to their babies. The little birds had to do more of their own digest-

ing. Finally, at the age of three or four weeks, they were accepting almost raw, partly broken-up fish from the beaks of their busy parents. And then, just as the little creatures feathered out and were lovely white babies with small tufts of fuzz protruding through clean white feathers at unexpected and grotesque angles, they were given small sardines, which the parent presented to them head first.

Wonder of nature; the necessity for more food at shorter intervals had, without any intent on the part of either parents or children, evolved a perfect weaning process.

Late in spring I saw a feather floating like a bit of old lace down upon the surface of the pool. It had dropped from the nest in the crotch of the tree.

Sic transit gloria mundi; the bridal finery was going.

Soon two simple white herons were perching far apart on a naked limb of the great tree. To the casual visitor at the big cage, there was nothing to suggest that a life story, such as the one I have described, had recently transpired.

CHAPTER XXVI

Raising a Family

1. THE COURAGE OF DESPERATION

In the life of any animal, even in captivity, there is scarcely a dull moment. Every day I see something that I long to show the world, something that happens as I stand passively by which must be typical of life outside the zoo.

In our great flying cage the other day I observed what appeared to be the beginning of a tragedy that I would be helpless to avert. Instead it became a great victory won in a thrilling exhibition of valour.

In our eagle cage, where we confine a large group of carnivorous birds, a valiant and sagacious pair of ravens built a nest in a most advantageous position where they were protected above, below, and on all sides except one. In this selected spot, on a huge mass of sticks snatched from the very eyrie of white-breasted sea eagles, four eggs were carefully guarded by the two parent birds. The one on the nest faced the only opening from which danger might approach; the other parent guarded the home shrine from a distance of ten feet. Standing upon a sharp pinnacle of rock he fought off all intruders. I have seen him strike with sturdy beak and vicious claws at the bare head of an Andean condor until the great vulture was glad to leave the spot. I have seen him chase a golden eagle the length of the cage, beating about its head with his wings, striking at its eyes like a black fury, until the eagle, utterly confused, huddled down in the first safe refuge.

We had little real expectation, however, that the housing arrangement, clever as it was, would be sufficient, or that the ravens could possibly incubate eggs and raise their young. When we discovered four husky nestlings looming above the mass of sticks our optimism grew daily. The dangerous period, of course, would be when the little birds must try their wings. They would probably become scattered and, unguarded by their wise parents, who could not watch all four, would not know how to protect themselves or where their enemies lay in wait.

The first time I saw the young out of the nest they were on a high point in the very apex of the great cage. The parents had driven an Australian eagle from his favourite roost and there was barely room upon the small flat surface for the four young ravens to huddle. They had hopped with flapping wings from their nest and climbed to this topmost peak, point by point. It was a magnificent piece of strategy, for in flying the young ravens would have a take-off from the very top where they would be safe from any bird that would like to drop upon them. They would fly above the tops of the great eucalyptus trees so that even if they lost part of their sailing height they would still be above the vantage points of eagles and the big hawks most liable to attack from the air. Moreover, the spot was so conspicuous that it was easily visible from any part of the cage in case an immediate return became necessary.

When the great day came on which the little birds must fly, one parent stood guard over three while the other parent called out the first-hatched and sailed with him to a bare limb half-way across the cage. Of course, I could not tell the almost identical youngsters apart, but for a week I would see one flying while the other three huddled together awaiting their turn. Then, one day, either they felt sufficiently grown-up to fly alone and started out together without orders, or the parents realized the time had come for them to face the dangers of life. At any rate, all four left the peak at one time to circle around the cage.

I did not see the beginning, but suddenly while passing the cage I saw the caretaker run out, not locking, only hooking the door, and hasten back with a long pole in his hands. There was a tremendous noise in the cage; the air was filled with beating wings. The excitement was over the efforts of a young raven to free himself from a tight angle in the framework far up in the top of the lower end of the cage. He was eighty feet off the ground, having apparently flown head on between two sharp 'I' beams that met at an acute angle. He had slipped down into this until his body was protruding in front of the steel, which held his spread wings fast behind him. He was in such a position that he would have to be lifted up and out. Great birds of prey were now gathering, ready to strike and tear his flesh; but the steel supports and heavy wire so close to the bird made that dangerous and difficult. They could not dart at him very well, but must drop from above or light on the framework and crawl over to their intended victim. He was terribly frightened, and we could see that he was hurt. His lusty screams had brought both parents to him.

Together they surveyed the situation and seemed to agree on a plan. Both birds flew back to their high perch, calling the other three scattered babies to them as they flew. Their urgent caws were a distress command which had an immediate result. The three returned in amazing haste to their safe retreat. As soon as they were there, also cawing vigorously, one of the parents left for the fray, and just in time, too. A bald eagle, bolder than the rest, was darting towards the baby, while on near-by crossbars three more killers coldly calculated the scene.

The raven hit straight at the approaching eagle with such fury as I have never seen, cawing frantically to warn the imprisoned baby to duck his head as the eagle passed. The second parent now joined the first, and, throughout the uneven fight, they called constantly first to warn the free youngsters to remain in seclusion, and second to encourage the captive not to give up hope. Darting at each eagle in turn,

they drove the bald eagle away and the others from their vantage points. Then, flying above their child, one sought to rouse him to greater efforts to free himself, while the other flew again and again to the three safe ones to warn them that they must stay where they were. Alas, on one of these trips, a young bird in his excitement followed the parent back. He lighted on a tree half-way down the cage, wide open to attack. The two birds had to drive him to safety, and warn the three once more to stay on their peak. Then they returned with even greater vigour to the defence of the helpless one.

Meanwhile two men had reached the lower level of the cage. The parents, sensing that help was at hand, tried more than ever to cover the baby from attack by the eagles, who also knew that rescue was imminent. One rough-legged hawk became so intent upon striking the baby raven that he locked feet with the defending father. As one man fought off the condors with a long pole, the other man climbed the steel brace. This was very difficult. While doing it he had not only to protect himself from the excited would-be killers but keep his eye on the parents, who were not always careful in their lunges at the enemy. Bit by bit, however, he mounted upwards until he reached the baby. Gently lifting the bruised body from the vice-like angle, he dropped it into a net below. The parent birds, as though they knew he was safe, returned to their other charges.

On examining the young raven we found that one wing had been fractured from beating itself against the iron, and there was a cut in the black breast that looked rather hopeless. But the doctor, after cleansing the wound and taping the whole wing properly folded against the body, thought there was a very good chance for recovery. Two days later, when passing the baby's cage, I paused for a second to hold out my finger. With a harsh caw and much vigour the baby attempted to grab it. The uneven battle had gone not to the strong, but to the brave.

The baby bird would never be able to fly and protect him-

self properly in the wild or in a cage of birds his equal. So we sought and found a good home for him as a pet, since that was the only future in which he could be happy.

2. BABY TRICKS

There come from the Celebes Islands a group of handsome monkeys with tails so nearly lacking that they are often mistakenly called Celebes apes. In many ways they are as much like baboons as apes, and so we display them between the baboons and the long-tailed macaques, or Asiatic monkeys, to which they belong scientifically.

Two years ago three such monkeys came to our zoo, and settled down to be healthy, happy, and popular exhibits. One day, as they sat grooming each other, I noticed that a blessed event was approaching each of the two little brown females. As we had not had this species of monkey born before, we anticipated the births with great excitement.

Just as we were becoming anxious, we found a tiny, pink-faced, stub-tailed baby being attended lovingly by both females. He was all head and eyes, and centuries seemed to have passed over his wrinkled face. But to the mother, he was the most beautiful and extraordinary child ever born. The father—a friendly, fat old fellow whose teeth had been worn down from gnawing holes in the coconuts of his native land—looked with some indulgence, but little interest, upon his first-born American child. He left such things, in his sane way, to the women of the family.

Two weeks later the second baby was born, more wrinkled, much smaller, and more aged in appearance than the first arrival. The second baby, born of the smaller and less hardy mother, did not thrive as well as the first, and his mother carried him in her arms a little longer. But when he did begin to run around he was the most daring and intrepid little creature I have ever seen. The older one had played on the floor, but did not climb very high upon the wire until the tiny one led the way. Then up and up the two would go

until they came to the crossbar. At this juncture each mother would spring for her baby and carry him to safety.

One morning while the older child screamed for help, the younger surmounted the crossbar and went on up to the very top of the cage. Having arrived, he looked down to a scene that must have had for him the perspective of a view from the top of the Empire State Building. Unhesitatingly, however, he crawled out on the ceiling of the cage to the very centre, where he reached for the chain that supported a swing. Down this he went to the big round hoop midway between ceiling and floor. Holding on to the hoop, he slid and scrambled down the slippery metal until he reached the bottom of the circle. By this time his eyes were round and staring, twice their natural size. He was frightened, but undaunted. Resting in temporary security he gazed down upon his family. He saw his placid mother idly going through the fur of her left shoulder in search of a stray flake of dandruff. Stretched upon the clean cement floor lay his huge father, as flat as a big fur rug—sound asleep. Only his little playmate watched the proceeding with horror.

Suddenly the adventurer doubled up his small legs, braced himself, and, aiming straight at the father's big soft body, jumped. It was a perfect shot. He hit the fattest, softest part. The great monkey jumped with a shriek of fear and sat bolt upright. Then he felt himself all over and looked around wonderingly. He could not see what had hit him or whence it came. The little monkey was safe in his mother's arms, his mouth fastened around a comforting nipple, his face pressed close against her sheltering breast as though he had spent the morning there.

3. DAD TAKES A HAND

Although most zoo mothers are wise, now and then we have a weak and foolish one. The most conspicuous of these was a bob-tailed common macaque who gave birth to her first baby quite late in life, and finding the responsibility

great worried so much that she nearly spoiled her own life and his.

Bobbie, dressed like a jockey, had been trained to ride small cars around a circular track at one of our beach amusement parks and her tail had been amputated close to her body for convenience. When we acquired her she was put in a cage with several others of her kind, among them a large, fine female about to give birth to her third child. Before this occurred, however, Bobbie gave birth to a son. From the start she was so nervous and devoted that she was in constant terror lest some other monkey touch her baby. She kept him tight against her breast and was afraid to walk, climb, or move around like other monkey mothers. The result was that when the other baby was born, nearly two months later, the first one was still being hugged hard in Bobbie's arms, with his little lips fastened tightly on her breast.

We hoped, when the second baby began to play, as he did in a few weeks, that Bobbie would see that her method was all wrong. But she did not. Her terror increased and she began to dread the time when she could no longer clasp her baby in her arms away from the rest of the world. The little fellow himself partially solved the problem by pulling feebly away from the mother's breast and reaching the wires and rods within the cage. After a few days of real struggle between them, Bobbie at last consented to put him down. But he wasn't free. She fastened her hand around his tail close to its root and kept him always near her. If he struggled to climb a few inches up the wire, she pulled him down again. Her constant hold upon the tail, which he as incessantly tried to pull away, earned him the sobriquet of 'Rubber-Tail'.

Daily we watched and wondered and worried. The mother's mistaken protection was preventing the growth of legs and body. Already the younger baby was twice as large as he, and courageous and bold where he was fearful. This fear had been inculcated by his mother's clutching her breast at the first sign of every danger, chattering and warning him to beware. He was afraid of everything in the world,

including his father and the other members of his cage group, especially the other baby.

Finally it became quite a sport for the younger child to see how he could harass Rubber-Tail before the mother would interfere. He also incited several real conflicts between the two mothers. Instead of harmony in the group there was now constant trouble.

One day the report came to me that a father monkey was apparently killing a baby. Upon hastening to this cage, I found Rubber-Tail's father—braced with three feet in a corner—holding his year-old weakling aloft in his fourth foot. Rubber-Tail was screaming and struggling to get free. On the shelf below, his mother, usually so shy and timid, was shrieking in rage and showing her teeth at her big mate.

When we saw that the baby was totally uninjured and that the father was doing nothing to hurt him, we did not interfere. After fifteen minutes, the male brought the baby down and dropped him without ceremony on the floor. He ran screaming to his mother, who looked him over carefully but could find no injuries. This was the first time Rubber-Tail had ever been more than a yard away from her. His little tail had become bare of hair from the hold of her strong hand upon it—a grip that was curtailing his diet as well as his exercise.

Several times a week for the next few weeks this comedy went on. Each day, finding himself unhurt, the little monkey lost some of his terror, though he continued to scream and run to his mother immediately upon his release.

Before long it seemed to me that the mother's concern was largely assumed, and that she was, were she to admit the truth, actually enjoying her new-found freedom. This proved to be correct. The day came when Rubber-Tail, after his release, ran to her for the usual coddling only to see her turn indifferently away. Rubber-Tail could not understand this. He plucked at his mother's side and pulled on her arms. She pushed him impatiently away and when he began to whimper she boxed his ears.

Rubber-Tail was forlorn, indeed. Stark tragedy had entered his life. He sat by himself and watched the other youngster play and run; when he ventured to run he merely wobbled. The other, seeing him alone, pushed him over. He screamed. But his mother heard him not. He slipped close to his father and timidly stretched out a hand for a piece of bread. The father went on eating, but the proximity of the big rough body must have been comforting for Rubber-Tail hovered near all afternoon. As the hours passed he seemed gradually to realize that, by his father's judicious interference, he had been emancipated. Cautiously now he began trying many of the little things he had always longed to do and found them good. He swung weakly on the wire and ran about a little.

When long shadows on the floor warned the nervous mother that darkness and cold were drawing near, she casually walked past the little fellow, and, as though by accident, gathered him into her arms. He snuggled down and buried his dirty, sad face in the familiar refuge. Mother had not entirely cast him off; she was carrying him tenderly into the sleeping-room of the tribe.

The next night, jumping boldly upon his father's back, holding to his long coat of hair with one clutching fist, he rode to bed in state.

4. A TRAGEDY OF MOTHERHOOD

Occasionally, for some unaccountable reason, animals in the zoo refuse to be mothers. They destroy their young ones, or, more often, the little ones die of neglect.

One female pigtail monkey had raised a delightful little son and we were looking forward with the greatest joy to an expected second birth. The father had always taken fatherhood much less casually than many of his kind, and had been most solicitous of his children.

The baby arrived on schedule and throughout the first day the mother was most devoted. Then she began to handle it

very roughly. The keeper and I conferred as to what should be done and decided to let her keep the baby a little longer. Late that afternoon he brought the tiny thing to my office, its skull battered, its body bruised and skinned. The mother, after becoming fond of it again, had, in an attack of sudden frenzy, beaten it upon the floor, and trampled it.

There are many theories for such infanticide; one of the most popular is that the mother sees that the child is ill or deformed. This baby was externally as perfect a specimen as one would wish. Except for the fact that its stomach was completely empty, with no sign of having eaten, it was apparently all right, internally also. We could not account for the unfortunate occurrence.

Nearly two years later another baby was born to this couple. Remembering the previous tragedy, I told the keeper to watch the mother every minute. She again took care of her baby tenderly and gently for the first day and part of the second. Late that afternoon, however, we noticed that the little fellow was distressed and now and then cried weakly. The mother held it to her, a little low, it is true, but none of us actually saw her refuse to let it nurse. She was ingenious in keeping her body between us and the baby so that we could not see the youngster well. She carried the baby into the sleeping-room early, and we thought she was worried about the cold and its weakness. But because of her one good record and her apparent concern and gentleness we did not disturb her more than was necessary. To harass a mother by trying to help her is often much more dangerous than to leave her to her own devices.

In the morning, on looking into the sleeping-room, we could not tell whether the mother had her baby or not. But when we started to clean out the big exhibition cage, we found the little one in the drinking fountain dead. It had apparently been drowned by being held under the water. It could not have got there alone. But I could not reconcile myself to the mother's cruelty coupled with her apparent affection for the child. It could be attributed neither to ignor-

ance nor to interference on the part of her mate, for he had tried to prevent the first tragedy.

Two days later the mother climbed up the front of the wire in response to my coaxing, and I noticed that her breasts, which should have been distended with milk, were flat and flabby. We have had at times to give medical attention to mothers who have lost their young and we are always alert to this condition. I called the keeper and asked him if he remembered seeing either baby nurse, and he vowed he had not. So we caught the mother and examined her.

There was not a drop of milk in her barren breasts. Poor little mother, she could not bear to have her whimpering babies slowly starve to death. In her despair—driven by wild instinct—she had destroyed each as soon as she was convinced it could not be fed. These were mercy deaths in her mind. We soon made an opportunity to send her to a zoo where she would be the only one of her kind in a mixed group of monkeys. In this way she would not again become a mother.

5. NATURE-FAKER

The urge to become parents is sometimes very strong in the zoo and we have uncovered one or two cases of real nature-faking.

We have a fine pair of marabou storks which we hoped would raise young. Almost as soon as they were turned loose they began to gather sticks and build a huge, unsightly mass on the far side of their canyon pen. When the pile of sticks was complete, day after day, one of the birds sat there in patient brooding. Finally, as weeks went by, I began to be suspicious and decided to investigate. At first I was reluctant to disturb what might be a natural process of incubating. Later, I found I could not manage it alone. The two birds defended their home too vigorously. Finally, the birdman drove the sitting bird off the big, fairly well-built nest and I looked inside.

In the hollow centre, covered with bird lime, there were three stones, comparatively round and the size of the egg of a stork. Whether they had been rolled into the nest or had been carried there in the strong beaks of the birds is still a mystery.

Year after year this long futile incubation period is repeated. We have not been able to convince these would-be parents that their warm hearts cannot hatch babies from stones.

CHAPTER XXVII

Big Sis and Big Brother

1. A SURPRISE PACKAGE

I have never learned just the term a psychologist would apply to some manifestations of the urge to become part of a family we see in the zoo. It is not always because of loneliness, or because of a peculiar mutual attraction. That would not account for the ring-necked dove which, in a crowded cage, decided not to nest as her cagemates were doing, but to incubate a big egg in place of her own, from which she hatched out and adopted a black bantam rooster. Nor does it account for the second bantam rooster which became the devoted admirer of a seal. And even as I write we have a most unusual affinity between a Canadian goose and a baby Patagonian seal which are housed side by side in the hospital cage, where the goose is recovering from an injured wing and the baby seal from a scratched eyeball. But these queer adoptions have their places in the studies of the zoo and we use them many times to comfort lonely single specimens until we can supply proper companionship for both parties.

We had noticed the dove patiently sitting in a corner of the cage where the domestic pigeons and black bantams share quarters, but, as the single dove was somewhat of an outcast, we thought at first she was huddling there to make herself inconspicuous to her tormentors. One day the bird-keeper discovered that she was really incubating a fair-sized bantam egg. As she had already been sitting on it for ten days he let her alone.

In due course, to our delight and her consternation, the shell

was cracked and a small, fluffy black bantam emerged. Nothing could have been more unlike a baby ring-necked dove. As soon as he was dry and strong the little fellow decided he would not stay in the nest. The dove hovered above him with widespread feathers, trying to keep him warm and also detain him. She stretched her open beak and tried to poke it down his throat so that she could feed him by regurgitation, the only system she knew. But he succeeded in escaping and ran about on the ground, picking up the chick feed that had been scattered for another black-baby brood. It was lucky for the funny little dove that a bantam mother in the cage knew her own chicks and drove him away. Otherwise the queer adoption would have come to naught but sorrow for the dove.

The baby bantam returned to his little grey mother, though he knew there was something very queer about her. He was unable to understand this odd beak business by which she attempted to compel him to accept nourishment. Eventually he made her realize that he must eat in his own way, but consented to let her cover him and keep him warm at night, squatting as low as he could to keep his long neck under her wings. I watched their going to bed many times. The bantam would settle down. Then the dove—by dint of balancing and spreading her wings—would hop on his back and finally get adjusted so that she could stay on. She refused to be content to have him cuddle at her side with one wing spread over him. It must have been very uncomfortable for both; but they continued the custom until long after his first moulting, when he was head and shoulders above her.

One day, however, the growing rooster rebelled. He waited patiently until she was neatly balanced; then he stood up and walked away, carrying her with him. Wings spread to keep her balance, she retained her position for several seconds, during which she hoped he would settle down again. But he did not, and so she had to hop off, content with having successfully brought the bantam to the stage of self-supporting manhood.

2. BIG SIS

Big Sis is the oldest child in our Guinea baboon family. Her real name is Jennie, but no-one ever thought of calling her by that name after her little brother was born.

She was scarcely more than a baby herself. Her mother was rather a giddy sort and had allowed two previous babies to die from sheer neglect. Her mate had tried to make her take care of them by putting them against her breast and holding her arms about them while he held them in his own big strong arms. But as soon as he let go the mother would put the baby down on the cold, damp floor and go away. Yet she resisted all our efforts to rescue the little thing and would have torn it to pieces rather than let us have it.

But when Jennie was born she apparently concluded that motherhood was her fate and that she must make the best of it. She was tender and neglectful by turns. When Jennie was fourteen months old the little brother was born. The father examined the baby carefully, admired it extravagantly, and offered to share his emotions with the family. (Thirteen children and two grandchildren have now been welcomed with this ceremony.) When he showed the baby to Jennie, she reached out her weak, thin arms to take it. The father tenderly put him in her little awkward hands. At that instant she became Big Sister, shortened later to Sis.

Big Sis was reluctant to give the baby back to his mother. She held him to her own scrawny breast, pushing out her breastbone to make it look big and important. The mother was not nervous and let Big Sis hold the baby for several minutes. Then she took him back until the burden of the clinging arms and warm body pressing against her became wearying, whereupon she put him down to play. But every time she put him down, Sis picked him up again and proudly carried him about. He pulled on her fine hair with his clinging fingers and toes until her sides were naked. But she never tired of playing mother.

When the next baby arrived Big Sis became the really im-

After that 'old baby' became her responsibility alone, the mother being fully occupied with the younger child. One of the proudest occasions of Sis's life was the moment when the mother put down the new baby. Sis picked it up and held it hanging below her breast. 'Old baby' looked up and saw the usurper. Instead of running to climb into the arms of his mother, he jumped on to the back of Big Sis, just above her hips, and, with strong little fingers holding fast to the long fringe of hair on her shoulders, rode around in that position.

This sequence of events occurred with every succeeding birth. 'New Baby' became 'old baby' whenever Sis took over the task of caring for him and his mother turned to the latest arrival.

On Christmas Day two years ago a great event occurred. Big Sis herself, then nine years old, gave birth to a son. The grandparents were more excited than they had ever been over the birth of one of their own children. The fat little grandmother, carrying a three-months-old baby of her own, was sure Big Sis knew nothing about taking care of such a wonderful child. She tried to take it and nurse it. Big Sis was very diplomatic. She permitted the grandmother to examine the baby and allowed the grandfather to show him around to five admiring aunts and uncles. Then she demanded her rights, and got them.

We named Big Sis's baby Chris because of his birthday. He was a strong baby, which was lucky because he had to undergo a great deal of handling. Only the latest 'old baby' held aloof. Fate had dealt her a bad blow. But Big Sis was

still mindful of her charge, and seemed to understand the little creature's misery. Tenderly picking up her own child she walked on three legs over to the lonely little baboon pouting in a corner. She sat down and held out her free hand. 'Old baby' did not hesitate; she snuggled right up close to Big Sis. A little later, when Sis stood up to move with the changing sunshine, she again held out a free hand and this 'old baby', like the first, jumped to her back and triumphantly looked down upon the newest 'new baby' hanging suspended under Sis's breast.

3. THE HEART OF A CLOWN

One morning a man called up to announce that he was bringing us a marmoset. In a short time he appeared with, to our astonishment, not a marmoset, but a very stunted, naked, mangy spider monkey, only seven months old. It was all stomach and eyes, and we had small hope of its survival. Careful treatment in the hospital, however, and a corrective diet, brought about an almost miraculous healing. Soon he was able to go into the big cage, a dome-shaped affair equipped with highbars, shelves, and trapeze, and inhabited by twenty clowning spider monkeys.

Among our group of clowns are some who add to their naturally comic appearance and behaviour a real sense of humour. One of them, a black female marked by a light triangle in her forehead, has earned the name of Clown by clowning for the public and for us at every opportunity.

One of her most famous 'acts' is to take a small rod or bamboo pole, stand it firmly on the floor of the cage under a low bar, and when she has it balanced climb up to the top before it can fall. Then, keeping the rod in perfect balance, she swings from it to the bar above her. Grabbing this with her prehensile tail, she pulls it to the top of the cage, or swings it idly in the air while sitting on the high bar. It makes her furious to have another spider run into her balanced pole or grab it as she tries to pull it up.

Perhaps the most human bit of clowning she has ever done was aimed to attract the attention of the head keeper and myself. We were discussing a better clean-out system for the cage and paying no attention to any of the inmates. Clown, like the others, was doing all sorts of things to attract our attention. Suddenly, I saw her cling tightly to the wire near us with her long, strong tail and pull with all her might to get loose. She pushed herself away from the wire with her feet, lunging and scolding at her tail. Suddenly she stopped fighting the aggravating part and turned around to study the situation. Pretending to realize for the first time that it was her tail that confined her to the wire, she took hold of it with her hand and tugged. As she did so she very gradually loosed the tail from the wire. When she had freed it, still seemingly not recognizing it as part of herself, she seized the tip in both hands and, holding it high above her head, walked off across the cage on her two hind feet. It was a unique trick, cleverly executed, and of course we laughed heartily. But Clown, like the true performer in the sawdust ring, heard nothing. She ignored us as completely as we had ignored her before she succeeded in attracting our attention.

When we introduced the little orphan into this cage we wondered just how he would be received and how he would adjust himself to the big group. Clown saw him, and his comical, half-naked, still pitiful condition appealed to her kind heart. Casually she reached over and gathered the homely little creature to her side. Both arms of the baby encircled her body and he was 'home' where he belonged.

For a while Clown lived in terror that one of the other monkeys might find her treasure and usurp it. She huddled high on a shelf away from the rest, moving away only to snatch a bit of food for her foundling. As time passed, however, she regained her old confidence, but her clowning almost ceased.

Now, I know, at times she is very tired of the clinging arm and warm body, for the baby will not let go of her even for a minute. She has already carried him longer than the average

spider mother carries her baby in her arms. She pushes him around to her back or side and tries to sneak away, but he clings tightly. Her heart is too tender to treat him harshly. So, with a sigh, she picks up her burden again. She is the adopted mother and cannot get away.

4. A SWIMMING COACH

Now and then a male develops a real desire for parenthood. One such creature is an old spotted seal that has been in the zoo almost since its inception. This leopard or harbour seal is known as Blinky because he has one milky or marble eye. Due to this defect of vision he has never been saleable, but he is fine and fat and happy, and is content to lie in our pools where food is brought to him and where no enemy can attack him. He is a true hair seal, shoving himself forward on the muscular wall of the abdomen instead of rearing his body upon flippers and shuffling along as would the fur seal and sea-lion. His kind is probably the most widely distributed seal, being found on the coasts of all oceans.

Each time a new group of young seals is brought to the pool—we do not collect oldsters because they do not adapt themselves well to captivity—Blinky takes upon himself the responsibility of teaching them how to behave in a zoo. He has even had to teach some of the babies, picked up by fishermen along the beach, to swim. He takes them out in deep water and turns them loose. They paddle like puppies until tired. Then, unable to return to shore alone, they open their little mouths and call '*Ma-a-a*' in a very human tone.

Old Blinky hastens to the rescue; holding out a flipper, he lets the struggling babies hook their tiny flippers over his and tows them ashore. If a baby is too panic-stricken to take advantage of the tow, Blinky dives deep under him and brings him up squarely on his broad back. Here the little seal remains until he has regained sufficient strength and courage to swim again, or he is transported back to the beach, where Blinky, by raising his body above the surface, rolls the little

Whether or not it was due to Blinky's teaching, I am sure we have never had a better or more spectacular swimmer in any of our pools than the young seal became. He would dart through the water, cutting 'eights' and circles, first above and then below the surface. He would turn on his back and come up directly under people hanging admiringly over the fence, his silver belly exposed to the light. After a complete circle in the air, he would dart below the surface of the pool and disappear like a dark shadow.

Even after the baby seal was so old that a mother would long since have refused to care for him, Blinky continued his parental interest. The youngster grew to be as large as Blinky, and, as he grew, darkened so that he was no longer a silver seal. But he is still easily distinguished from the rest in the pool.

Blinky lay on the side of the pool one day last summer as I passed with a visitor, a former San Diegoan, now living in

Dallas, Texas. The man stopped just in front of Blinky and asked, 'How long have you had that blind seal?'

'He was here when I came,' I answered.

'Well, I helped to catch that seal in 1924 on Coronada Islands. After three of us had carried him in a crate up a high cliff to escape the rising tide and had slipped and fallen into cactus with much pain to ourselves, we found that he was blind in one eye. But we brought him to the zoo anyway. That was nearly fourteen years ago. He was almost an adult then, and so must be well along in years now.'

'Yes,' I agreed, 'but his health is excellent and he has led a very happy, useful life.' To prove it, I described his successes as a swimming coach to the orphaned young.

CHAPTER XXVIII

Among the Bears

Nobody ever outgrows the days of Goldilocks and the three bears, no matter how old he may be. Next to the monkeys the bears attract the biggest crowds and hold them the longest time. And when a grotto is occupied by a mother bear and her cubs the show is without an equal.

There are not more than a dozen species of bear in the world. They are generally so much alike that to know one is to know all. More than any other animal they follow one pattern of behaviour. We had twice, at different times, a little koala bear from Australia. The koala is a nocturnal bear which lives entirely upon the leaves of a certain very limited species of eucalyptus. Each of our koalas was cunning in its movements, beautiful in its thick fur coat, and adored by the public not because of response to activity but because it was unique and attractive in appearance. Our reputation as a zoo was greatly enhanced because we kept one alive for nearly three years, a record outside of Australia. The other came to us in a terrible condition and was short-lived. Now there is no hope of our obtaining another, for they have become very scarce even in their native land.

Our prize possessions are two giant Kodiak bears brought to us from Kodiak Island by Fred Lewis when they were still hissing, growling, woolly cubs, and three spectacle bears brought by G. Allan Hancock from the slopes of the Andes. These latter are, without doubt, the rarest bears in any zoological collection and appear to be present in only one other zoo in the world. Secretly I call them Winken, Blinken, and Nod.

Although very tiny, they are full-grown. They derive their common name from the large, whitish rings which encircle their eyes, like great white-rimmed goggles. They are not only seldom seen in zoos, but are rare even in their native land, a very limited area high in the Andes Mountains. They never find their way into ordinary markets. Our trio occupies a grotto much too large for them. They spend less time in the water than any other bears I know, but are great climbers and will soon be provided with a small cage containing a huge cement tree up and down which they may go to their hearts' content.

People play with bears rather than spend their time observing or studying them. To me bears in a zoo occupy the role of clowns in a circus. They are indispensable, but not the real thrill of the show.

Most people take for granted that the woolly cubs they see slipping along behind their mothers through the National Parks in late spring are bears a few weeks old. Actually, however, they are at least four months, for no other animal brings forth so comparatively small and weak a child as these great hulking creatures.

One autumn our grizzly bear, Babe, suddenly decided to hibernate and stuck to her resolution in spite of anything we could do. Hibernation is nature's defence against food shortage and cold; consequently bears in zoos seldom hibernate, with the exception of pregnant females. We piled bales of straw in the inner of the two sleeping chambers of Babe's grotto, closed all of the solid steel doors in that section so that it would become a warm, dark cave, and hoped that we might have some grizzly cubs. By the middle of December Babe had begun to refuse all food and lay sleeping soundly, curled up in the middle of the great mound of straw she had been shaping and working over for days.

On the 8th of January we heard queer noises, and when we opened the door an inch to peek in, Babe came towards us, growling and sniffing savagely. We closed the door quickly and for several days contented ourselves with listening and

placing milk in the outer chamber. On the third day after birth the milk was consumed and on the fifth day Babe really began to eat food of all sorts. On that day we opened the door and looked in.

On the pile of hay were two squirming, naked, brown-skinned babies, smaller than baby pigs, and completely helpless. But they had man-sized voices. Theirs were the heavy growls we had heard while waiting. We crept away elated, for, although very young, Babe was taking excellent care of her two babies. We took the first opportunity to shut Babe in the outer chamber, and, carefully picking them up in a bundle of straw to avoid any 'man smell', we weighed them. Each child of the thousand-pound mother weighed a trifle over fourteen ounces.

Their eyes, like those of newborn kittens, were tightly shut until the fourteenth day. They lay helplessly on their fat stomachs with legs spread out at right angles. But they could speak for themselves and we could hear their growling as far away as the front of the grotto, at least a hundred feet.

During their helpless state the babies nursed entirely from the nipples on the lower abdomen of the mother; later, when they could stand erect, they nursed from the mammary glands of the breast while the mother sat up in a corner.

A month passed before they could crawl on all four legs or raise themselves off the floor of the cage. But during the next three weeks they developed so rapidly that, at the end of this time they were rolling around on the floor and playing with each other. They were covered with thick brown fur, still had big voices, and didn't like people.

When the cubs were three months old Babe began to spend most of her time in the outer room, leaving the babies to sleep by themselves. As spring was at hand, we opened a door leading into the big out-door grotto. Babe stepped out into the sunshine and looked warily about. The other adult bears had been transferred into an adjoining grotto. Babe heard them sniffing and scratching at the grating between the two grottoes and rushed back to her cubs. After four days

of this venturing, a little farther each day, Babe finally led her two cubs out into the sunshine. Rather, I should say she nosed them out. The rough stone floor felt strange to their tender feet and they growled at each step, ready to retreat at the slightest sound. They were sure an enemy lurked behind each rock. Babe encouraged them until they were fairly well out into the grotto. Then, suddenly startled, both turned and scampered back through the door into familiar safety.

Our bear, lion, and tiger grottoes are all built upon the same general plan. The outer part is a sloping floor, approximately fifty feet deep from back to front and up to a hundred feet wide. The grotto is protected by a wide moat between the outer wall, where visitors stand, and the cement floor surrounded by high side walls, where the bears remain on exhibit. The edge of the floor is about twelve feet above the floor of the moat, while the outer wall is at least eighteen feet high. The adult bears turn around backwards and, clinging with their front feet, carefully drop themselves down into the moat to get the candy and peanuts thrown without sufficient force to reach the floor of their den. There are two shelves on the bears' side of the moat to enable them to climb back easily whenever they wish.

Babe seemed to have confidence that the two cubs would not fall over and began to walk out to the edge of the moat almost at once, but it was at least a week after their appearance on exhibit before she was able to coax either of the cubs that far. Then Lottie, the little female, slipped and down she went into the moat, twelve feet deep, where she squealed so loudly that she was heard many blocks away. The mother bear was doubly distressed—torn between the baby in trouble in the moat and the danger of the other baby's also falling from the ledge. While we were getting equipment for the rescue, she climbed down backwards to the first shelf, resting her hind feet on it and placing her front feet on the edge of the floor of the grotto. She alternately cautioned the baby above to stay where he was instead of following his sister, and reassured Lottie down below.

When she saw that we were lowering a ladder from the side wall, she returned to the floor af the grotto and coaxed little Simon into the sleeping-room, after which a keeper dropped the door to hold him there in safety. Then Babe returned to the grotto and climbed down the ladder nearly to the floor of the moat. The baby was running around the foot of the ladder, crying. Babe was vexed and worried, and so she scolded and cajoled. Finally, step by step, she induced the baby to climb up to her. Taking the nape of Lottie's neck in her mouth, and supporting the heavy body with one front paw placed under the little rump, she climbed laboriously up until she reached the topmost rung of the ladder. Then, with a big boost, she hoisted the baby over the top on to the floor of the grotto. And what did Lottie do? She immediately ran back to the edge to peer over. The mother gave her a resounding spank that sent her back to the middle of the grotto. Then Babe walked over and licked and comforted her until all fright was forgotten and she had cuddled down to sleep. Wise little bears—neither ever fell into the moat again.

Babe was an excellent mother. She pummelled her cubs and turned them over and over to give them proper exercise and often gave Lottie a great massage with her big paw on the fat little stomach.

She fed them regularly and always in the same corner. She would go there first and then, sitting up, would call the babies to nurse. Lottie would take a position on one side and Simon on the other, after which both would begin to nurse simultaneously, pushing their front feet against her broad chest and humming like small motors. Often, their stomachs full, they would slip down easily into round little balls of brown fur and sleep right where they had been fed. If one waked slightly he would bring the flat sole of one foot up against his blunt nose and, pushing hard against it, would hum himself back to sleep.

As the cubs grew older they took the initiative about feeding. One on each side, they would urge their mother into the corner so that they might nurse. I have often wondered if

Polar bears, a popular exhibit

Babe teaches Lottie that her back and stomach muscles

Babe did not just pretend to be reluctant for she always appeared to get huge fun out of her final capitulation.

Her favourite way of getting them back into the room for a real nap was to rush wildly back towards the sleeping quarters as though she heard the food truck arriving. By now their teeth had developed and they were also eating dry bread and other articles of food. The babes were always fooled; they ran past her, pushing and shoving each other to reach the inner room first. Babe would stop just short of the door and wait until they were well inside. Then she would sit down in the door, filling it completely. Soon a loud humming would begin and in another instant both were fast asleep.

The funniest bear fight on record took place the day the father was turned into the family group. Simon suddenly felt that he was the protector of the family and so challenged the big bear by standing erect, holding his chin down against his throat and snarling from extended lips. These challenges between grown bears usually end in just noise. But when big Alec, the father, also rose to his feet, Simon rushed in and attacked him fiercely in the abdomen. Alec was at a great disadvantage. He could neither drop on all fours and reach the little fellow with his mouth, for the baby would be completely under his unwieldy body, nor could he stand up and wrestle in bear fashion because the little chap was too far below the level of his arms. Completely baffled, he decided to take the little affair as a farce. So he patiently endured Simon's weak biting and scratching until the little fellow, feeling no effect from the fray, concluded he was the victor.

Backing away, he dropped on all fours and ran for the bedroom to which Lottie had already fled. Alec followed, apparently to give the smarty a lesson. But the door was not open wide enough for him to enter. The little fellow slipped through into safety and the big bear, unable to follow, turned to lumber away, not fast enough, however, to prevent one more humiliation. The baby, seeing his chance, dashed out and bit his father's heels.

It is always with an ache in my heart that I tell the story of

Babe and her cubs, for her own life ended in tragedy, one of the few such incidents that we have had in the zoo. So many animals meet with a tragic or violent end in nature that perhaps in zoos we expect too many happy endings. Although the first thought in all zoo construction must be the safety of the animals and escapes in zoos are almost unheard of, Babe actually did escape from her grotto, and this is how it happened.

The floor of the grotto where Babe gave birth to her young and raised them to big children suddenly began to settle and break away from the walls. The builder who had constructed these grottoes had put a fill-in under the floor, and, thinking this would hold, did not reinforce the floor sufficiently. In order to repair this oversight we drove Babe and Alec and their youngsters into the three big sleeping-rooms at the back of their grotto, padlocked the doors tightly, and proceeded rapidly with the work of reinforcing the floor of the outer grotto. By Saturday everything was in readiness to pour the concrete floor early Monday morning, including erection of a temporary bridge over which the concrete mixture was to be hauled. That year the 4th of July came on Sunday and the double holiday meant an enormous number of visitors in the zoo with an assignment of special police in anticipation of the heavy crowd.

Just at noon, as I sat in the café having lunch with Doctor Wegeforth, one of our own men rushed past us into the office of the Superintendent, where eight high-powered rifles were kept ready for any emergency. Startled, the Doctor and I ran into the room and he told us that the grizzly bears had all escaped from their sleeping-rooms and had walked out into the grotto. Heartsick, the Doctor and I started in the direction of the bear grottoes along the high road. We were not unduly alarmed, however, because we knew that these bears, just like the wild bears in Yellowstone, have no fear of man and little respect for him, but again, like the bears in Yellowstone, they were not on mischief bent and would not attack anyone unless they were crowded.

We looked down into the canyon where the bears were housed and saw people swarming from all parts of the grounds into that small area. However, before we got where we had any view of the bears, two shots sounded in quick succession. I started to run and in a few steps came to a vantage point from which I could look down into the grizzly-bear pen. There, well inside the moat, stood big Alec and little Lottie. Simon, the male cub, was half-way across the temporary bridge, headed back for the grotto. I hoped that the shots had been intended to drive the bears back. Rustic stairs led into the canyon and down I went. Between the guard fence of the small grotto, containing the Malay sun bears, and the main grotto lay the body of Babe.

The police officer standing there with his gun in his hand was the most dejected-looking individual I have ever seen. He turned to me and in a shaking voice said, 'She came up out of this grotto raging mad. I could not keep the people back; they crowded around her on every side. She did not know what she was doing and, just as she came over the fence within a few feet of a group of children, I knew I had to shoot.'

Of course, his duty was to protect the people and he knew it. One officer alone could not have held back three thousand people swarming to get within touching distance of a frightened bear who had suddenly discovered that she was out of familiar ground in the midst of surging human beings. She had climbed over the rail and partly into the grotto occupied by the three small Malay sun bears. These vicious little creatures had rushed at her with their long fangs bared. Babe did not intend to fight. She turned back to escape from them only to be crowded by yelling, shouting individuals, and then she became so confused and terrified that she felt it was time to protect herself.

We have never completely solved the mystery of how the bears were liberated. Several padlocks had been sawed off the chains which held them in place. The big lever which controlled the sliding doors in the bear grotto was held in

As always, much criticism was heaped upon the zoo management and the police officer who shot the bear, and one priceless card came to me which told me that it was all because I was a woman and incompetent; that if I had had a man in charge of the zoo, the bear could have been lassoed and dragged back into the grotto. Well, of course, the head keeper was a man in complete charge of the animal men; the keeper of the bears was also a man, and so was the police officer who fired the fatal shot. Moreover, the one case on record where the lasso was ever employed to capture an animal in such circumstances resulted in the death of the bear in horrible agony because, in his fury and excitement at being lassoed, he pulled so hard that he literally tore himself in two before they could release the lasso.

Each time an animal escapes in any zoo, all efforts towards safety devices are redoubled, and yet, from time to time, tragedies such as the death of the mother bear do occur. We feel that we are fortunate that in San Diego a severe injury, either to a keeper or a visitor, has never resulted from an escaped animal or from the entrance of anyone into an unprotected cage.

The bears used for training are always European brown bears, although all bears are responsive to the public and, by watching and imitating each other, can produce a galaxy of tricks to coax peanuts and lollipops away from the crowd of

visitors. The group of bears here is quite large and very comprehensive. It contains a pair of beautiful white polar bears which are famous for their high dives and fine exhibitions of swimming. And may I answer that question in your minds by saying, 'No, indeed, polar bears do not suffer in our warm climate and there is no ice in their pool, for long ago we found they could be made perfectly comfortable by proper diet.' From the North country, too, we have Jimmie and Joe, the Kodiaks to whom I have referred before. They are tremendous, weighing over a thousand pounds each. They came down from Kodiak Island off the coast of Alaska in the shipment that brought us Marie, the famous walrus. We also have two fat old black Alaska bears, Mary and Alice, which came down from Alaska with Captain Hancock.

In our American bear group we have one handsome big male which is representative of the brown phase of the black bears. 'Brownie' was brought from Colorado by one of my pre-zoo friends. He built a trailer for Brownie's comfort and drove him into the zoo one day as a gift for me personally. Like Brownie, most of our bears have an interesting personal history. Especially interesting is the story of a black bear which lived with us for several years but never did live in peace with any of the other bears. His distinguished background might have had something to do with it, for he was presented to the old frigate *Constitution* on its cruise to the Pacific Ocean. The woolly black cub was the joy of the crew and was christened Scrappy. He was kept on board the *Constitution* until he grew so large and naughty that he had to be transferred to the tender. There he became obnoxious and the story goes that whenever he was too bad he was dropped over the side to swim and exercise at the end of a rope. Finally Commander Gulliver called me and begged me to take Scrappy off his hands. We did, intending to rename him the U.S.S. *Constitution*, but Scrappy was too appropriate, and he will live and die Scrappy. As he could not agree with our group of bears, one day as a special favour to our friends in Auckland we sent them a pair of American black bears,

and one of the bears was Scrappy. He is now the idol of the children of Auckland because of his comical personality and because of his interesting story which is painted on the sign on his cage.

Asiatic bears are represented in our zoo by sloth, Himalayan, and Malay bears. The last are much smaller than other bears, but they have as much fight and ferocity as a Kodiak bundled up in their not more than seventy-five pounds of compact, muscular, pint-sized bodies. These two bears came in with a queer shipment of animals in 1928. In the crate with them were two young orangs, one a tiny weakling baby, the other our present full-grown and important Maggie, and a silver gibbon. The bears could not have been more than five or six months old and Maggie, about three months of age, was the boss and little mother of the gang. On arrival we separated them, but they pined so for each other that we decided to keep them together. So all went into one big monkey cage equipped with a swinging hoop, shelves and big sleeping boxes. It was a very attractive combination.

At dinner-time the two little orang-outangs always chose a high shelf on which to eat their boiled rice, raisins, and milk. Drinking their milk out of bottles and eating their rice with spoons, they constituted a great show for visitors.

The dainty gibbon also selected a high shelf, but apart from the others. He preferred to be alone when he ate his fruit and lettuce.

The two sun bears ate on the floor, sharing a big flat pan full of rice, or oatmeal, and milk, or a dish of steamed carrots, potatoes, and spinach. During the meal they were mortal enemies, growling fiercely at one another. But after dinner, friends once more, they would lie down side by side. The two bears on their fat stomachs, with their sharp noses resting on the soles of their turned-up front feet, would then sing themselves and the other wild babies to sleep with the humming, sleepy song all baby bears sing.

As Maggie grew, she became a little more overbearing

and playful. She would tease little Jiggs until he would fly into spasms of puny rage, and she tormented the gibbon until he fled, crying, from her rough-and-tumble play. But with the little bears it was give-and-take. She pulled them around and rolled them over, and they loved it. Often, while they were gobbling lunch, she spreadeagled her arms and hung herself, head down, from the swinging hoop in the centre of the cage. Back and forth she went in growing arcs, almost brushing the bears with her head each time she passed. Suddenly she brought her arms swiftly together and grabbed one of the bears by the back feet, dragging him away from the food pan. With a fiercely angry squeal he hustled back to his pan, but Maggie swung by again and pulled him away a second time. After that she desisted until he thought she had finished, whereupon she would grab him again and away he would go. He was very angry and upset. But Maggie just hung upside down, laughing. You could call it nothing else. Her mouth was open from ear to ear and she squinted out of her partly closed eyes upon the growling cub below.

But all the while Maggie grew the little sun bears were also growing, and day by day their resentment at Maggie's practical jokes increased until it was too great to be endured. One day, while they were eating, Maggie went back and forth in her swing, grinning as usual. Suddenly down she swung and grabbed hold of the round, fat stomach of one of the bears and held on. He snarled and struggled to free himself, but was held fast until she released him voluntarily. Then back she came to pull him away a second time, but the little bear stood his ground now, ready. Just as she passed, he raised a big paw, with heavy nails, and struck. We could hear the impact against her head. Maggie dropped like a stone, holding her head and screaming at the top of her voice. She was not badly hurt, but her sense of humour had received a hard jolt.

The bear finished his dinner and then decided it was his turn to torment. So he started after Little Jiggs. Maggie, seizing the youngster, swung him up on her shelf out of

CHAPTER XXIX

Pets in the Zoo

1. A HAVEN FOR PETS

From time to time people bring pets to the zoo. Now and then something very rare or precious finds its way to us and has either become a public darling or a great showman because of training in living with people in early life. But as a rule most of the specimens are not uncommon. Most of such donations are monkeys or birds, and we have been given one or two kangaroos, and a few of the local carnivores. Usually the donors insist upon giving us directions for the care and proper feeding of the pet. They insist that he must have bacon for breakfast and cake and ice cream for dinner, and proudly end with, 'He eats everything we do.'

It is useless to try to convince such people that pets are almost always a nuisance in a large public zoo. The staff is always small. Also, pets in private homes are usually overfed and petted far too much for their own physical good. Sugar, grease, and stimulants cause most of the pet trouble that is being constantly brought to our attention by people seeking help and advice. We lay out simple feeding schedules but this does not please the many, who prefer something complicated and will stand before a cage of beautiful parrots in perfect plumage and refuse to believe that a simple diet of fruit, seed, and greens is what their parrot, a naked, rough bird, requires.

When such a pet is brought to us we simply promise to take it and do our very best with it as long as it lives. Some-

times, after days and weeks of careful work, we are able to introduce it into our cage. But if it shows fear of the wild creatures in the cage, it is almost hopeless as an exhibit. Animals, like human children, are cruel, and when a creature reveals plainly that he cannot hold his own he becomes the victim of general teasing, if nothing more cruel happens to him. Often, however, an animal with plenty of spunk will end up by becoming the boss of the cage. 'Boss' is right, too, for in every group of animals, a sort of government or control is set up, and, unless something happens to introduce trouble, peace reigns. We have had some very sad revolutions as the young have grown up and have taken their place in the cage, and one especially surprised us.

2. THE NEW GENERATION

One of the pets brought to the zoo early in my career was a beautiful brown weeper named Irish. Fortunately, we were able to find a mate for him, and the first baby born to Irish and Mommie, his wife, was our pride and joy, for these monkeys are seldom born in captivity. We named the baby Nemo, but as he grew older he became so cross-eyed that the keepers renamed him 'Ben Turpin', later shortened to 'Ben'.

When Ben was born, Mommie pushed him on to the back of her neck and kept him there, day and night, with never a thought of her own comfort. From time to time she would lie down on a shelf and permit him to crawl down under her arms to nurse, and then back he went.

After carrying him thus for four or five months, the little mother began to show signs of impatience. She would lie on the shelf and, by rolling over, actually rub him off so that her back could rest and cool off. Then one day, as he was lying on the shelf by her side, Irish came by and curled up beside his family. He had apparently been missing the grooming he was accustomed to receive from his mate and felt that he should have at least part of her attentions. Mommie offered him a half-hearted response. As she groomed him she moved,

very slightly at first, but she gradually put his body between her and the baby. Then she sneaked away to the end of the shelf, jumped to the wire, and was gone. Irish waited a few minutes for her to resume her 'flea-picking'. Neither he nor Ben realized they had been deserted.

Suddenly Ben looked for his mother. Failing to find her, he started to wail. The father sat up, and when he, too, discovered Mommie was gone he started to seek her. But he reckoned without his son. When Irish made his first move to leave he found himself saddled with Ben's fat body. Two strong little hands clung to each side of his face, two grasping feet circled his body right under the arms, a tail had wrapped itself around his arms, and a little chin rested on the crown of his head. Irish was greatly embarrassed. After a moment he rose awkwardly and moved along the shelf. He went to some rough plaster and tried to rub the baby off. The baby clung the tighter. Irish jumped to the wire front of his cage. Still Ben clung like a leech. Irish had been hooked by the little hitch-hiker.

Whenever Irish tried to attract her attention, the mother was attending to some very important business elsewhere in the cage. How good that cool fresh breeze felt on her back where the hair had been worn so thin! All that day she made Irish carry his child. But when the long shadows came she walked over to him and permitted Ben to crawl back where he longed to be.

For several days Irish was on his guard. Then, one day at the dinner table, Mommie leaned over against him and Ben slid to his father's back. If she took him to herself that night I did not know it. The youngster had been completely weaned and of his own desire was spending part of the time on the ground, part with his father, riding in triumph, and the remainder with his mother.

Irish fulfilled his paternal duty in this way with each of four sons in turn, humility itself while carrying the babies, moving carefully with head on one side and neck stiff. Irish was well-groomed, with more than average intelligence and

But a glove was always considered the property of Irish alone. He did not share it with his family as he did a cigarette. He would put it on each hand or foot in turn; pull it inside out and reverse it; hold it in his tail and romp with it all over the cage; balance it on his head, and then gather it up under his chin. He would repeat these antics for hours, all the while whimpering with joy. During this period the entire family would surround him, admiring his art and skill and doubtless feeling that they shared in the distinction of their worldly father. Finally he would begin taking the glove apart, seeming always to anticipate that somewhere, in a tip of a finger, perhaps, he would find a hidden treasure. In this act of destruction the family rejoiced greatly, for it gave each an opportunity to acquire a section as it was discarded. Grabbing a scrap of kid or fabric, one by one they would seek a secluded spot to copy as nearly as possible the actions of Irish.

During all the years Irish was a dictator he was never a tyrant. Although demanding obedience and taking his choice of everything, he cared well for his family and often settled trouble with almost human judgement.

It was, therefore, with great surprise that we discovered a family row in Irish's group. At the time I imagined that the sons had been quarrelling and that when the screeching subsided it was because Irish had settled the matter. But the keeper informed me later, 'Ben gave Irish a thrashing.' Ben

was by now a full-sized adult. In the next few days there were more fights. Then Irish stayed in the sleeping-room and had to be fed separately. When I went in I found the once-bold Irish sitting on a shelf, the most cowed creature I ever saw. He sprang into my arms, shivering and crying. He had several cuts on his arms; his crest, usually erect, was flat, and his well-groomed coat was matted with blood and filth. He went gladly and willingly to the hospital, where his wounds were healed. But his feelings had been hurt worse than his body. His whole family, including Mommie, had sided with Ben.

When we returned him to his cage, he cowered in a corner and let his sons do their will with him. So he was put in with another family. They have adopted him and he them. But his great brave spirit went down in a defeat from which he has never recovered.

PART 6

Zoo Business is not all Monkey Business

CHAPTER XXX

Buying and Selling

1. GOING TO MARKET

To-day, I laugh at the vague ideas I once had about the real business of running a zoo. A person would have to be familiar indeed with a zoo to know the many varieties of dealing that must go on. For instance, the value of specimens in the market and in the collection for which they are intended must be known to both parties to a deal. The markets for animals and what each dealer considers a good specimen and the condition in which he ships it must also be familiar to the director. Few people know that dealing in animals is a big, well-established business with huge depots and office staffs on each side of the two major oceans.

The value of specimens in zoos depends somewhat on the interest of the local patrons or on the ease or difficulty with which specimens are kept alive. Sea mammals are of great interest to interior zoos, and tropical animals to zoos in cool regions.

Many deals, especially between zoos, are in the nature of an exchange, based more directly upon a mutual need of desire than upon quoted prices in animal markets. If a zoo has a single specimen and is anxious to obtain a mate or merely a cage companion it may be willing to pay much more than the market price, or it may be willing to exchange a specimen not needed in its own exhibit and of actually greater value in the open market. One of the greatest demands upon us is for our young. We have the greatest nur-

Spring and early summer is baby time, but as our animals come from both sides of the equator we are frequently (and to our great surprise) presented with some rare baby animal, or with a clutch of rare eggs, in the coldest part of our winter which should be spring or summer for the unfortunate parent. These new babies are most welcome, first, because they are an added attraction and bring many visitors; second, because they provide a normal family-life group to study from day to day; and, lastly, because when the babies grow up, if they are not welcome to either parent after they have reached the age of independence, they are a great asset commercially.

Just before I came to the zoo our President had exchanged twenty-three California sea lions for four beautiful polar-bear cubs. We were to deliver the seals when and to whom our dealer sold them. The polar bears arrived, but we were years paying for them with seals. Many times I would have liked to pay that debt in cash, but had to carry on according to the exchange.

I am sure that those zoo directors who order great carloads of animals and write cheques for thousands of dollars miss some of the joy that I feel at obtaining, by hook or crook, some small specimen that is lacking in our collection. Due to generous friends, the big things usually come fairly easily. For instance, both our gorillas and the elephants were purchased with money given for that purpose, and more recently sufficient funds were granted to purchase an entire group of big mammals in one shipment.

We have collected sea birds, snakes, seals, and all the many interesting small creatures that range the wild areas of California to use in exchange for specimens. But, of course, we

could not bring together with such localized methods a great collection of rare and expensive animals. We have to go out into the world and buy, and collect, to obtain the really big specimens in our zoo.

Perhaps the most famous of all animal dealers is the firm of Hagenbeck & Sons. The Tiergarten at Hamburg, Germany —known all over the world as the Hamburg Zoo—is actually a holding farm of the Hagenbecks. Hagenbeck & Sons is now headed by two sons of the founder, Lorenz and Henry, and is operated with the help of several of their children. Some of the boys have visited the zoos in the United States in order better to supply their needs, and recently Eric Hagenbeck established an agency in the United States.

Another well-known international firm is the Ruhe family. Their main animal farm is the beautiful Zoological Garden at Hanover, Germany, and the third generation finds the work as fascinating and lucrative as the founder, who combed the world for collections of animals to sell to European zoos. On a recent trip to New York I visited the American holding station of the Ruhe firm, located in Flushing, Long Island. Attendants were living on the farm in small cottages, and the animal quarters were barns with big box stalls. Many of the barns opened out into yards or runways spacious enough to accommodate hoofed animals, and even elephants, camels, and giraffes, and all were as carefully planned and isolated from each other as though forming part of a Government quarantine station. Behind the barns and open pens were bird cages topped with wire netting. There were many shade trees, pools, and flowing fountains. The feed boxes were not as ornamental or as substantially built, but they were as carefully planned, in regard to the needs of the animals, as though the specimens were on exhibition.

The large dealers and many of the small ones send out regular monthly price lists quoting, first, small cage birds and animals for pets, then groups of monkeys, then carnivorous animals. Being less expensive to ship these are offered in larger numbers than are the hoofed animals—

antelope, deer and kindred creatures. Finally the big, expensive mammals such as giraffes, elephants, and so on are quoted. After the price lists are sent out, sixty to one hundred days usually elapse before the animals are actually received at the large gardens or holding farms in Europe for shipment later to various purchasers. In some cases they are held in Africa or Asia subject to orders received. Lists of the rarer and more expensive animals are headed 'PRICES WILL BE FURNISHED UPON INQUIRY' because few zoos have sufficient funds with which to obtain them.

When a zoo wishes to obtain something not on a price list, it communicates with those dealers from whom it has received the best service. However, we do not depend on dealers alone. We write to other zoos, to game wardens, to Government officials, and sometimes we send a man to the country of origin of the specimens desired on a scouting expedition. He gives out the information that within the next year the San Diego Zoo will be in the market for giraffes, elephants, saddleback tapirs, or whatever animals we are seeking. As the result of such tactics, letters and prices begin to pour in, and sooner or later the exact specimen at a price we can afford is forthcoming.

There is no exact technique in buying animals. The zoo man loves to slip into an animal farm and snoop around without being bothered by the dealer, who can distract your attention from a bird's missing toe, or an animal's crooked ear, by glib conversation and a little excitement to make the animal move about, as though to show him off. You cannot let the dealer know you suspect him of hiding a blemish or defect. Yet to arrive home with a blemished specimen is something greatly to be regretted.

If the dealer is in his shop or near at hand, the best approach is to say casually, 'Got anything new in?' as though, of course, you did not know of any fresh arrivals. Usually the dealer takes his cue from this and says, 'Not much, except a few antelope I don't think you saw the last time you were here. Anything special you are interested in?' Then you both

saunter purposelessly down the aisles between pens and cages until, if you are the impetuous sort of person I am, you come upon a slender-legged antelope or a gorgeous bird and completely forget the pose of indifference. You ask breathlessly, 'When did it come?' and 'How much is it?' and a deal is under way. Sometimes your buying trip, if money is plentiful, is more or less a hunting for bargains or specimens to fill out groups. But often you have to confine yourself to just those things you have pledged yourself to buy.

Doctor Wegeforth and I are the same kind of buyer. We promise each other solemnly that we will not buy anything except just certain badly needed specimens. Then, as we go past a crate containing something we long for, or which seldom comes into the market, our glances meet. We know we are going to get it, and we hope the dealer is going to be reasonable, and it is surprising how many of them are.

I have often wondered why so many people are impelled to start in the business of animal collecting. Surely not because it is such a lucrative profession, for it is not. Perhaps it is the lure of strange, wild locations. Dealing in animals affords an opportunity to travel in out-of-the-way places and at the same time to earn at least a respectable living. Again, some of those engaged in fur-trading will suddenly decide to bring back from the Far North polar bears, musk oxen, or walrus, and collectors of leopard and monkey furs, and the skins of leopards and cheetahs, will return from Somaliland with gorgeous living animals, even including giraffe, rhinoceros, and elephants. When they do, they make contact with zoos and a new source of supply is opened for us.

I am sorry to say that for a good many years animal dealers in the United States did not compare favourably with European dealers, the majority of whom are real scientists and value highly their reputations for integrity and honest dealing. Gradually, however, a different type of man has entered the field and so to-day many of our American dealers are a high type of business man who has gone into this occupation sometimes as the result of his interest in the local zoo.

Zoo Business is not all Monkey Business

At first, the prices of animals amazed me. Giraffes cost anything from five to ten thousand dollars each, a pair of elephants two and three thousand each, and gorillas were prohibitive. But as more and more zoos have succeeded in raising young animals, and especially since the American zoological gardens have organized into an association with a central bureau for distributing their surplus specimens, the prices of animals brought from the wild have ceased to fluctuate so much and value has become a very stable figure. Improved facilities for transporting and caring for animals, as well as better knowledge of the habits and requirements of animals, have cut down the loss of life in transit to such a degree that I honestly believe established prices have come to stay.

It is true, of course, that a few extremely rare creatures like giant pandas, okapi, or bongos have brought fabulous prices for dealers and great commercial returns to the zoos purchasing and exploiting them. But it appears very likely that these, too, will be removed from the realm of profit and speculation by the Governments controlling their capture. Even now steps are being taken by such powers to present them to zoos and refuse permits for their capture or exportation by collectors who have been tempted by the high prices reputed to have been paid for them. Permits to collect and export rare animals, birds, and reptiles must be obtained even by zoos and are issued in such limited number that many, like the mountain gorilla of the Belgian Congo, are completely removed from illicit trade. Without the element of profit it is easy to see a future in which animal dealers will become the agents or representatives of zoological societies rather than speculators in living merchandise.

2. A TRADE IN GIANTS

One of the animals which children most expect to see in zoos is the hippopotamus, the 'blood-sweating behemoth' of the circus. Next to the mighty elephant and his trunk, chil-

dren seem most impressed by the huge, ungainly body of the hippo and his enormous mouth which he obligingly opens to its full extent to receive a peanut infinitesimal by comparison. For years we wanted to have a hippo and every time a young one was offered for sale we tried to obtain it by some exchange. Finally we had what we thought was a chance. Another zoo was exhibiting an enormous southern elephant seal. It was creating a great deal of attention. This was further increased by the loss of a circus elephant seal so huge he was called 'Leviathan'. His death was lamented and advertised almost as strongly as his exhibition had been.

We were exhibiting northern elephant seals, found only on Guadalupe Island lying two hundred and twenty miles south of San Diego, but had never commercialized the capture and exhibition of these magnificent animals. At this time we felt, in view of the increasing interest of people in other States in these great mammals and because our children were longing for a hippo, that we might make some sort of a trade with an inland zoo whereby we could obtain a young hippo to grow up with us. We knew that in the zoo at Memphis, Tennessee, there was a breeding pair of the great river beasts and so approached that organization with an offer of trade. But to our regret the two youngsters they had raised had already been promised to the Brookfield Zoo at Chicago. So the years went by and none would exchange a hippopotamus for our rarer and much more valuable elephant seal until the young hippos we had tried to get from Memphis grew up and became parents of a much-publicized baby whom the children of Chicago had christened Puddles. Puddles became the hero of a book and grew from a sixty-pound babe to a 450-pound child in the short space of a year.

At this time the director of the Brookfield Zoo came to visit us and was much impressed by the activity of our sea lions at mealtimes as they raced up and down our big pools, diving for fish and churning the water into a choppy mass, trying to beat every fish to the spot where it would hit the water after being thrown from a high, overhanging bank.

Being a good showman he immediately wanted that great exhibit for his own. So we did a little salesmanship and took him on down the canyon, where two half-grown elephant seals, each weighing fifteen hundred pounds, slept at the deep end of their pool with only a small fraction of their elongated snouts above the still surface of the water. We spoke to them. Instantly the two great heads disappeared beneath the surface. Then, twenty feet nearer us, they slowly reappeared without even a ripple, and the great dark-grey bodies slipped rapidly and with incredible smoothness towards us. Their speed was so great that the huge bodies shot up on the sloping bank at the shallow end of the pool until half of their eighteen-foot length was exposed. The keeper stepped up with four big pails of fish. One by one, turn about, the four-pound mackerels slipped into an open mouth. While the mouth closed for a split second the other seal got his fish. This went on until all four buckets of fish (about seventy-five pounds for each seal) had been emptied. Then, flat on the muscles of their abdomens, helped along by short, stout flippers, the giants propelled themselves farther up the bank into a big flat bed of sand. Stretching out full length, they sighed with their exhaustion from such heavy labour, flipped some sand up over their broad backs and went to sleep—two scarred, weather-beaten, unbelievable monsters of the deep.

Our Chicago director was easy to talk trade with after that show, and for three years now we have been trying to obtain a mate for Puddles.

Upon his arrival in San Diego, Puddles, who was very tired from his long trip in a car that was not air-conditioned, was brought immediately to his new home, where a fine enclosure awaited his coming. He had never been so near many people before and he did not like the idea of their coming close to his crate. So he kept charging at everyone who approached and stamping loudly, opening his mouth wide to champ at them. He had never seen a fence and we did not wish him even to bruise himself on our railing. Therefore we had tried not to have too great a crowd present to greet

Photograph by L. H. Boldrick

Puddles in profile

him on arrival. The little fellow was actually red-eyed with indignation at the confinement of his trip, at the handling and shoving to which he had been subjected, and the dry heat of the great American desert, when he was forced to depend upon a barrel of water for his daily bathing. By the time he reached San Diego, he had made up his mind that head keeper Smith was his friend and he knew and answered Smith's voice. Smith had tried in every way to gain his confidence; but this did not include the rest of us. Once out in the grotto he made straight for the pool and did not leave it until after night, when, to get him to bed, we had to drain the water from it. Then, in the bright moonlight, he explored the whole grotto while Smith and I hung over the fence, hoping that the smell of his supper would tempt him back into his box and 'so to bed'. About eight o'clock I decided he would have to go to bed without my assistance. But I had scarcely turned my car around before Puddles wandered into the crate, the door was dropped, and he could be heard smacking his lips and snorting around his big pan of grain.

The hippopotamus has teeth very much like those of a swine. Puddles has well-grown tusks at four years and a mouth filled with swinelike teeth. He can remain under water for eight or ten minutes before coming up for a breath of air, for he was taught to do this by his mother as soon as he was born. Mother hippos lie in shallow water compelling their babies to nurse below the surface. From time to time the baby sticks his little nostrils just above the water for air. Like all hippos, Puddles exudes a pinkish, latherlike substance, which increases under stress and excitement, when he sweats, thus giving foundation to the 'blood-sweating' of the circus beast.

When I walk past the pool where our once-baby elephant seal swims lazily and see how he has grown; and then when I figure express rates for shipping animals, I am certainly glad that we did our trading in giants when both giants were babies. Although we still call Puddles our baby hippo and think of him as small and cunning, actually visitors refuse to

believe that the great lumbering creature who pulls his heavy body slowly out of the pool is the baby about whom the book *Puddles* was written. In the four years since he came to our zoo he has done a bit of growing and now tips the scale at twenty-five hundred pounds. When fully grown he will weigh approximately two tons, but if he runs true to nature he will, being a male, never be quite so large as his mother. Puddles still comes to the rail, but when he opens his mouth, by way of invitation, visitors are really ashamed to toss a tiny peanut into the huge yawning abyss.

3. SOLD SHORT ON BUFFALO

I have never understood the many technical terms of the stock market, but one day I learned what it means to be 'sold short'.

For a long time there had been so little peace in the five-acre pasture where the American bison were confined that we decided to sell one of our biggest bulls. The market for such animals is limited and the price is not high because surplus bison in the national preserves are frequently distributed among accredited zoos. But an especially fine buffalo born in captivity and successfully exhibited is worth more than a wild one that may charge the stockades and fences and be dangerous to his keepers. So I included the big bison in my first list of surplus specimens offered to other zoos. Receiving no inquiry concerning him, I decided to try other markets. Whenever I wrote to any likely prospect I asked if a bison would not add to their collection. Eventually one of the largest of private Zoos asked the price. I quoted my top figure, because that particular zoo never wanted anything but the best and their evaluation of an animal was often gauged by its price. Weeks passed, however, and no order came. I felt that I had put the price too high, but sat tight.

Then a carnival show came to town. The owner was in financial straits and was eager to get rid of some of his specimens preparatory to going to the Orient with a group of

American animals. He asked us to board and feed his pythons. None were eating, all were in poor condition, and several had sore mouths from diseased stomachs or from striking them against the too small exhibition cage. I asked him if he had ever taken that noble creature, the American bison, to the Orient. No, he never had. He was interested. So I offered to trade a bison for two pythons and to keep the others temporarily. He told me that he would investigate the freight costs and let me know. Again time passed and I heard nothing. Meanwhile the snakes began to improve and I became eager to keep a couple. I wrote to him once and, receiving no reply, concluded my second bison deal was off.

Next I received an inquiry from my very first quotation of surplus stock. With a clear conscience I quoted a price to this southern zoo, and again days passed without a reply. I still had my buffalo.

Then, one morning, the storm broke. The first mail brought an order to ship the buffalo on a certain day to the southern zoo. Two hours later a wire arrived from the superintendent of my first prospective customer, the owner of the private zoo, informing me that he was leaving at once with a truck to pick up the bison. And at noon the snake man breezed in to ask, 'Can you get the buffalo ready to go out on the tenth of this month?'

I was sold short on buffalo. What did I do? I followed the time-honoured custom of all stockbrokers in similar situations. I bought in the open market and delivered a fine bison bull to each of my three customers.

CHAPTER XXXI

Collecting Expeditions

When we go after our own specimens it is officially called an expedition. There are two types of expedition. The first is that which starts off in a private boat such as the *Velero III* owned by Captain Hancock or the *Stranger* of Captain Lewis, to visit places where trading in animals has never been commercialized and where most of the specimens must actually be collected in the wild or purchased from natives with money or commodities taken along for the purpose. The second type is not strictly a collecting expedition, for the animals are ordered and are usually ready for delivery before we start.

I have been on three of the first kind of expedition, including two to Guadalupe Island in quest of a very rare fur seal. One day a fisherman told us he had discovered, through killing a seal, that fur seals had reappeared on Guadalupe Island and to prove it showed us a strip of fur sealskin. This was a startling discovery, indeed. We offered the man a liberal sum to go back and bring us one or two male specimens of the seal he had found. He was to keep the matter secret, was not to kill any more seals, and was to get the exact count and location of the herd.

In a few weeks he returned with two fine, mature, genuine fur seals. We were tremendously excited and fulfilled the financial part of our bargain, even to meeting his demand for an additional several hundred dollars before he would give us the exact location of the herd. We immediately took steps to protect any living seals and to make the proper scientific ex-

amination to determine the authenticity of the find. But our discoverer had already given the news to the papers and it had been whispered along the water front.

We sent out an expedition only to discover that he had given us the location of a group of rocks far south of Guadalupe where no seals could possibly have had a rookery. For four years we continued the search, without avail. Then one day a woman told Doctor Wegeforth that she had been aboard the boat when the seals were discovered and could guide us to the cave. We engaged a small boat to take her to the island. The *Koka*, a navy tug, with most of the members of an expedition aboard, was to follow the smaller boat in twenty-four hours. Suddenly Doctor Wegeforth turned to me and exclaimed, 'But we can't send this woman on that small boat alone. Mrs. Benchley, you'll have to go along as chaperon.'

So my first inclusion in an expedition was not as a leader or a collector, not even as a member of any recognized value, but as a chaperon.

Guadalupe is a beautiful island rising six thousand feet out of the deep Pacific. For many years it was inhabited by Indians brought by Russian furriers from the Aleutian Islands for the purpose of collecting sealskins. Later it was used as a Mexican penal colony, and then it became the site of a cannery for preserving the meat of thousands of goat descendants from stock introduced by the prisoners. The canned meat was shipped to the British Army during the World War for consumption by Brahman soldiers. The cannery has long since disappeared, but not the goats.

While the island was occupied by Indian sealers innumerable fur seals and otter were butchered. Every year the seals would return to the island to give birth to their pups. Then, before the pups were old enough to join the annual migration, the mating season would begin. During its height the seals were utterly indifferent to danger, and it was then their slaughter occurred. Ships' logs of the period record more

than two hundred thousand skins brought to California alone. This went on, year after year, until the seals became extinct, and to-day the ruins of Indians' huts, a few stone fireplaces, and pegs along the sunny slopes where the skins were dried are the mute testimonials of beauty destroyed by human greed.

The woman whom I was chaperoning, and who said she had been present when the cave was discovered, told of walking along the shore and suddenly hearing the muffled snorting of seals in a deep crevice. They were evidently in a cave, but the entrance could not be found. Eventually flares were dropped into the crevice. The seals came out and the location of the cave was discovered and mapped. She claimed that at low tide she and the fishing party had penetrated it in a small boat and had captured the two fur seals that the fisherman had brought us.

We searched for that crevice for days but were unable to find it, and to-day we are convinced that the woman must have been mistaken, or that we went at the wrong time of the year for fur seals, which seems impossible. It is far more probable that the man, after being paid to tell us the place of his discovery, returned to the cave alone, slaughtered the seals for their skins, and smuggled them into foreign ports. But we are hoping that history will repeat itself and that some day a remnant of the herd will again return to Guadalupe for breeding purposes.

While cruising around the south end of the island we noticed a group of albino sea lions on a ledge high above the water line even at deep tide. The ledge, however, proved inaccessible. We have sent several expeditions since then to Guadalupe and the beautiful white seals are always there, but we have been unable to capture even one. We might drive them off the ledge by firing shots above them, but it would be practically impossible to capture a live sea lion swimming in the ocean. We have never seen them with any other seals or in any other place on the island. They must leave the high ledge, but when we have yet to ascertain.

On my second voyage to the island we visited Elephant

Seal Beach. For many years Yankee whalers, after poor hunting in Alaskan waters, would stop at Guadalupe to kill the northern elephant seals (a species found nowhere else in the world) lying helpless and dumb upon the sands of the island's outer shore. They took away only the great mass of fat lining their wrinkled hides. Our first count revealed less than three hundred specimens. On a more recent expedition we counted twenty-five hundred. The increase has become possible because the Mexican Government, urged by Conservationists, has penalized their slaughter.

Little is known of the life history of the northern elephant seals: where they wander, whether they ever leave Guadalupe, or where they breed and bring forth their young. We have had several live in the zoo for four or five years, one being the young giant we traded for Puddles. Their life span in captivity is usually brief, due to artificial feeding conditions. Many have died of ulcers in the stomach. In the wild, they eat little if any commercial fish, but have a diet consisting of limpets, slow-swimming squid, and such delicacies. Their beautiful soft eyes, of enormous size, indicate that they are nocturnal feeders. Clumsy on shore, they are smooth, beautiful swimmers, spending much of their time in and under water. Their hair is short and stiff, and when shed the hairs do not come out singly, but a thin layer of skin rolls off the body. This gives the old elephant seal a moth-eaten look especially around the head, in startling contrast to the sleek velvety appearance of the young one.

It was a foggy, cold day with a heavy roll when the *Velero III* dropped anchor offshore and we started for the beach in shore boats. As we drew near we passed a few of the monsters lying in the swells, their great heads rising above the surface and sinking out of sight as they wallowed in the heavy trough. Once two mammoth beasts, crowding each other for room, raised their heads, opened their great mouths wide, and with their long probosces thrown backward, roared at one another more loudly than the surf was pounding.

The sight, as we stepped upon the dark volcanic beach, was one I shall never forget. Hundreds of the great beasts, like giant sausages of light fawn-colour and enormously fat, lay as close to one another as possible. They were not at all bothered by the presence of human beings. It was necessary either to touch or push them to make them stir into action; then they merely raised their heads off the sand, roared, and stretched their mouths open to the widest possible extent, and struck to left or right with eyes still shut; after which they dropped back, to bask once more in the soft air of the beach. If kelp flies settled too thickly upon them, a flipper here and there sent up a thick spray of coarse black sand that fell back like rain upon their bodies. Occasionally, however, one of the elephant seals, made uncomfortable by the pressure of his companions, became wide-awake. Pulling his enormous body out from under the others, he would climb over ten or twelve of his sleeping comrades, who protested with a grunt but did nothing else about it, and proceed directly into the water.

When we had picked out two fine specimens, we woke them up from their nap and drove them beyond the limits of the herd. Huge crates with wide doors hinged at the top had been placed in readiness at the water's edge. They were buoyant because of great casks lashed along the sides. Two long pieces of fencing formed the sides of an aisle down which the seals were to be driven into the crate.

When we attempted to catch a seal he faced us, his enemy, and backed rapidly towards a crate; suddenly he was inside, the door was dropped and latched shut, the crate pushed out into the breakers and floated to the ship. Two were captured thus and not another seal on the beach knew it had happened.

Aboard ship, the crate was fastened firmly to a shady portion of the deck where salt water could be pumped and sprayed on the seals constantly throughout the voyage to San Diego. Twenty-four hours later they were landed safely in the big pool at the zoo. But not until, of their own choice,

they had slid down the sandy bank into the water, where they became two beautiful exhibits, did we breathe easily.

Our first 'expedition' of the second type was in the nature of an exchange with the Sydney zoo. Actually two exchanges were arranged, resulting in many new specimens for each zoo at very little cost to either.

Then, in 1936, Mr. Perkins went to Singapore and Surabaya to take delivery of many rare birds, animals, and reptiles. He brought back more than four hundred specimens with only the crew of the Dutch freighter *Silver Maple* to help him with their care.

I have not yet had an opportunity to go on an expedition of this kind but I am looking forward to the day when I may, and when it comes I know that I shall do my share in bringing back specimens for the zoo. Caring for small creatures, preparing the food, and performing the other tedious little tasks that take most of the hours of the day can easily be done by a woman who knows how, and I do.

Meanwhile, I do not complain at the fate that has kept me at home, for sometimes I think the pleasure of anticipating the arrival of a big new shipment—like a pile of Christmas packages to be opened—and of seeing all that it contains at once is greater than to collect the specimens one by one. Moreover, there is none of the day-by-day disappointment that comes to every collector on a big expedition because his efforts to get the creatures expected by those at home are apparently proving unsuccessful, and there is none of the heartache that occurs over unpreventable losses on the way back. There is just delightful expectancy.

We have stayed up until four o'clock in the morning, all the zoo men and I, waiting for the trucks to arrive from San Pedro where the ship has docked. When, finally, they do arrive, we peer into all the crates and ask a million questions, all talking at once, congratulating, welcoming, and 'ribbing' our expeditioner. But while we chatter we pitch in and work until everything is unloaded and installed in quarters of quiet

and warmth. Suddenly, morning arrives and we become conscious that it is daylight, and that we are tired, hungry, and cold. But we are happy, also, because another expedition has come home, our man is back, and pretty soon the new creatures will all be out, divided up among the keepers, each of whom feels that they are his own, and that in some way he personally has been favoured.

Not long ago Doctor Wegeforth secured donations with which to purchase a pair of giraffes and a rhinoceros in Africa. Their transportation across the Atlantic and, more particularly, across the continent to the Pacific Coast, loomed like an insurmountable obstacle. Finally we decided to send Charley Smith to New York to receive them and truck them across. He was to pick up a new chassis and cab in Indiana and have the body he wanted built in New York, during the time the animals would be in quarantine. The object in moving such delicate animals in this way (the first attempt of its kind) was to avoid some of the difficulties of train travel. No matter how they might be affected by the heat and motion of the train, there would be no way to stop and give them relief. Night and day they would have to endure its swinging, swaying and jar. But a truck could be halted at will to enable them to rest, browse, and relax.

Just before Smith was to leave San Diego a cablegram arrived to tell us that the rhinoceros had been lost. So when the body of the truck was constructed it was for two giraffes and was designed to give the animals every bit of room the chassis afforded. Trap doors, 12 feet 8 inches high, were built into the side and top so that they might poke their heads out to rest. A manger was built for their comfort and was padded and piled with clean hay for bedding.

The giraffe arrived in New York on the S.S. *Robin Goodfellow* the day after the great hurricane of September 1938. The ship had been caught in the very vortex of the storm. When it docked reporters were on hand to get an account of the crew's experiences, but when the newsmen saw the

two young giraffes they became the story. They made the front page as the only giraffes ever to have weathered a hurricane. Their food was washed overboard three days before their arrival, and during that time they lived on only a sort of pancake baked for them by the stewards. In their location on deck they were in the thick of the fury. The crate containing the female was rolled over and over until it was broken to pieces by the heavy beating of waves and other crates. She was left for dead while every effort was centred upon doing what could be done to save the male. Someone, however, happened to see her move. So she was covered and protected. No-one, however, could get her out of the wreckage. She was so tangled up that she had to extricate herself. Then it was discovered that her left rear ankle was apparently hopelessly injured.

Smith was in a dilemma. Should he accept the female giraffe with her bruised and swollen leg, which meant that we must pay for a cripple, or should he reject her as unfit, which would be equivalent to her death sentence? In favour of acceptance was the fact that it might be years before such an otherwise excellent mate for the survivor could be found, and, too, the purchase of a truck to bring home only one animal was unduly expensive. Doctor Schroeder, then in charge of the hospital of the New York Zoo, was as much interested in our zoo as if he were still on our staff. He advised Charley Smith to accept the damaged animal and turn his letter of credit over to our dealer. So the high, patched-up crates were swung from the ship on to the truck and Charley drove the two giraffes for forty-six miles through the waste and destruction and high water left in the wake of the storm. Eventually he arrived at the U.S. Quarantine Station at Athenia, New Jersey, where he sent me the following laconic telegram: 'JUST GOT LAST ONE OUT OF BOX. THEY ARE VERY TIRED EIGHT WEEKS TRIP WRITING ABOUT THEM ATHENIA NEW JERSEY QUARANTINE.'

Once in quarantine, of course, he was confined with his animals. He slept beside their stalls, listened to their every

motion, and became acquainted with them as individuals. He expected to leave by a certain date, but was too optimistic. When he tried to get the two giraffes into their crates the female balked. He coaxed and implored. She still refused. The dealer's helpers suggested that Charley lasso and pull her in by the neck, but Charley was unwilling to use too much force. After pleading with her for an entire day, he finally got her into the runway from the barn to the truck. There, however, she stayed for two days. Eventually he had to put a rope around her whole body and use a little persuasion. During her stay in quarantine she had become an accomplished kicker, landing one well-placed kick every day. 'I got to expect it,' Charley wrote, 'but I can't say I ever liked it.'

All the way home he slept at auto camps where they would let him park the truck right in front of his door. If he could not, the camp lost a customer. He listened to the breathing of his charges and worried when they were not chewing their cud for fear they had 'lost their cud', apparently a dreaded calamity.

I have never seen anyone so tired and relieved as Charley Smith when he drove the great awkward truck through the zoo gate, half an hour after telephoning me from a suburb. But was he proud of the two beautiful animals! He had done a grand job and he knew it.

With a big crane, borrowed from the harbour department, the crates were pried from the body of the truck and lowered to the ground. Previously the wire walls of the pen that was to be their home had been covered with canvas and branches lest the giraffes become suspicious of the new place and damage themselves in unloading. But our fears were unfounded. They were too tired to do any frisking. Charley coaxed them by holding out a big onion enticingly in the palm of his hand, and they followed him right into their new cage.

Not long ago Charley left for Mombasa to bring back two more giraffes, two young African elephants, two rhinoceros, and several other rare animals. The war has hit the men in

the animal importing game with tremendous suddenness and damage. An order for a shipment of animals is not given like an order for food or manufactured merchandise. The best collectors may be years getting together a shipment of sufficient size to warrant its being sent for. Neither can animals simply be loaded on to a ship. Regulations of both exporting and importing countries must be fulfilled. Health measures, designed to protect our domestic stock and the welfare of human beings, must be observed. Moreover, a sudden calamity like war increases insurance rates because of added jeopardy to animals, and freight space is at a premium. The promises of ship lines to bring Charley and the animals to the Pacific Coast may be difficult to fulfil, but that is a chance we must take.

When Charley was packed for sailing, when his passport had been put in order, and when all the shots had been administered that were necessary to protect him from disease, we felt that we had passed through a hurricane. That is, all but Charley. He was the only calm one among the lot of us. He knew it would be a long and trying trip, that he would work terribly hard and worry a great deal about the creatures he was to bring home. But he knew those animals were waiting, and so he was ready and eager to go.

I am quite sure that we shall not hear much about Charley's trip until his return. He is full of talk and wit and fun when he is around, but when away he makes me wait for news day after day until I am nearly mad from worrying. When, finally, I can bear the silence no longer, I let him know that I must have news. Then I get it, both barrels, good and bad. He has often bragged, 'When the Missus gets tired of waiting for me to write she just burns up the wires. She telegraphs "WIRE ME TO-DAY," and you can bet she gets her wire.'

Now, as I write, another member of our staff is getting ready to leave. He is Karl Koch, the head of our wonderful bird department, and he is going to Calcutta to take delivery of Indian elephants, two hippopotami, lesser pandas, clouded

leopard, otters, bears, and many rare birds. At Surabaya he will pick up some gibbons, hornbills, and other specimens awaiting his arrival. Karl is eminently fitted for this task. He knows animals as well as birds. We expect that, in addition to the specimens already held, he will pick up many rare bargains. He has been a dealer, as well as a zoo man. He is a world traveller and speaks many languages fluently. Karl has been on five of the Hancock Pacific expeditions as our representative. When on these, he is usually selected by Captain Hancock to be his companion on official visits ashore. Karl also receives foreign officials with the Captain when they visit the *Velero III*. This is because of his excellent Spanish and his cultivated instinct for diplomatic procedure. He acts as interpreter and coach in all formal matters. So he will not only make a valuable collector but a goodwill ambassador for the zoo in those ports where he stops to collect.

This expedition will probably be our last to this territory for many years and we are counting particularly on Karl's ability to bring back those rare, delicate, and expensive birds which can be brought only by someone with the infinite patience with little, fussy things that make up a birdman's existence. He will be willing to get up every few hours, during the night, I know, for I have seen him raise by hand rare cockatoos and parrots that have won for this zoo many medals for the first successful hatching and raising of such specimens. He knows just the delicate variations of food necessary for each bird and small mammal, and is skilled in accommodating them to captivity. His information on birds and animals, in fact on natural history generally, amazes me for he is not only well educated by schooling but by travel, and has the power of observation, and application of what he sees to the need at hand.

With the completion of these two expeditions we should fill all the main gaps in our collection. The highly desirable specimens yet to be obtained are just sufficient to keep interest in the future of the zoo alive, as only anticipation and ambition can do.

PART 7

The Sick and Injured

CHAPTER XXXII

Hospital in the Zoo

To many people the idea of a hospital in a zoo is horrible; to others it is absurd. The people in the first group confuse medical research with vivisection or experimentation upon animals in ways that are cruel and heartless. Those in the second category have just not thought of the many problems that must be solved in connection with the care of animals, both free and captive. When we established the hospital it was with the intention of keeping the wild animals well and happy in captivity.

A sick animal cannot be a happy one, and a happy, well animal is first of all clean. In nature, animals move on, leaving their filth behind them, and an injured animal in the wild runs little chance of infection for the reason that rain and sunshine, the best of all purifiers, destroy the causes of infection and disease. The first duty of our hospital staff is to supervise the cleanliness of the zoo, direct sterilization and disinfection, and constantly improve, so far as is possible, the handling of food, cages, sleeping quarters, and the animals themselves.

Supervision of food includes ascertaining that the sources are healthily clean. Gone long ago is the idea that an animal is a dirty creature, deliberately choosing unclean food. Whoever saw an animal select poor, filthy, and inferior food? Even scavengers and carrion-feeders in the wild accept it only because of lack of hunting equipment; in captivity, they very quickly refuse putrid meat and food of poor quality.

Of course, cleanliness is partly a question of taste and

habit. The offal of a slaughter-house is rich in food qualities needed by beasts. The lion, and this is typical of most killers, tears his way immediately into the abdominal cavity of his kill, to obtain not only the warm blood that fills its vital organs but the rich vitamins and carbohydrates contained in the half-digested food in its stomach and intestines. His chosen place and time to kill is at the water-hole when the animals have gathered to drink after feeding on dry grass all afternoon. So, too, with most of the birds of prey who tear the fur and feather covering from their victims, and consume much of it as they wrench the creature apart to reach the long strips of vital organs. Feathers, fur, bone, and vital organs are a necessary part of the diet of many creatures and must be considered in feeding schedules in a properly conducted zoo.

Every animal that dies is autopsied in the chemical laboratory. The organs are minutely studied, first, to ascertain why the animal died; second, in order to prevent the death of other animals due to similar causes, if possible; and, finally, to increase our knowledge in order that we may improve safe feeding conditions generally. Our pathological material is put to many uses. Daily shipments are made to scientists or research workers in special fields who are needing more material. Eyes go to one man; genital organs to another; tapeworms to one university professor; kidneys to a second; skeletons and brains to other places, and so on until even the excrement of snakes finds a laboratory where it is greatly needed for chemical purposes.

But there is another function of our hospital that is very vital. No animals are kept in solitary cages. All are introduced into family groups as early as possible. Before this can be done, however, it is necessary to know the condition of the newly acquired animal and prevent its bringing into the group some parasite or disease which—though not particularly injurious to that individual or even to his species—might attack and ruin others with no resistance to this particular threat. Every animal that comes into the zoo, therefore,

is subjected to stool tests and perhaps to blood tests or skin scrapings for the presence of parasites. Its reactions to our feeding plan are also carefully noted before it is introduced into the cage. It does not matter from whom the specimen comes, or what its past has been. The great body of creatures making up the collection is our first consideration, always. The period of quarantine also provides the animal with an opportunity to rest and become acclimatized.

In spite of all our precaution, the hospital is frequently used for the care of the sick and injured. There is scarcely a day when our veterinarian is not called for consultation in some emergency. Perhaps it is an injury from fighting, perhaps a complicated birth, or lack of milk for a newborn young, or a broken leg because some person has thoughtlessly excited an animal, or possibly just an illness from many natural causes. Every such condition must be reported to the doctor as soon as discovered. This does not always mean that the animal has to go to the hospital.

One of the most difficult things I have had to conquer is sorrow and self-condemnation when something happens to an animal that causes its death, but as long as I know we have all done our best, not been careless or negligent, I can absolve myself, as I learned long ago to absolve all the others, from blame. Due to this same experience I am to-day able to consult intelligently with our veterinarian and with the specialist he chooses to call in. I am confident that they will value my advice, not because I am the person in uppermost authority, but because my opinions are well founded, through experience. I cannot help but suspect, also, after thirteen years of close association with a widely varied collection of animals, that I have an understanding of the minds and dispositions of our charges and a penetrating insight into their needs as a result of some inner quality that I cannot name.

It is a standing joke that I can ride past a pen of any sort of animal and discover things the keeper has missed. Perhaps he is working much too hard physically, or too close to see something that instantly catches my eye. An example is the

following. We had a pair of twins born in our Panama-deer pen. Within a few days of their birth, one in fright ran into the fence and injured his head slightly but so that it caused some worry. Away on a holiday at the time, I did not learn of the accident until all trace of the injury had apparently disappeared. I had paid no particular attention to the young buck after that, for he had apparently lived a normal existence. But on returning to the zoo, after an absence, a year later, I made a rather careful inspection trip round with the head keeper. Just as we passed the Panama pen a young buck stood up and I noticed something wrong with him. Stopping the car I asked Smith, 'What happened to that yearling's eye?'

'It looks all right to me,' he answered.

We got out of the car and walked over to where the yearling stood. He opened his eyes wide and faced us. He looked all right. But as we remained there, he forgot us for an instant and when he did his head drooped a little in relaxation and I saw what had attracted my attention. One eye was smaller than the other because the lid dropped. We called the keeper. He assured us there was nothing wrong and that only a few days before he had been describing the case as one of the few in which an injury had cleared up so completely as to leave no trace. The head keeper turned to his man and remarked, 'She sees more about our stuff, just riding by, than we do handling, feeding and caring for them every day.' I had not been looking for things that were right that day, but for things that were wrong. Whenever I discover an expectant mother or a newborn baby before the keeper does, he is always just a little chagrined.

Of course, all our watchful care cannot prevent some animals from being able to conceal their conditions so that sudden startling deaths occur without any previous warning or knowledge. I have seen near-miracles brought about under the skilful hands of our surgeons. We have had three excellent men here during the eleven years our hospital has been in full operation. I have seen some beautiful work, and I have seen some animals die in spite of skill and untiring care. I

have had to decide on some occasions: 'Let's not prolong the creature's suffering; it cannot be well and happy; let nature take her kindly course'; and again I have said, 'Let us put it to sleep with the greatest mercy we can know.' It is hard to condemn a creature to death, even to end hopeless suffering. But unless the good of other animals or human beings would be served in great measure by its suffering, it is kinder to end its life as gently as possible than to permit it to live.

The hospital was planned and equipped by a group of outstanding physicians and surgeons. They spared no effort to obtain financial backing for the purchase of every known facility for ministering to sick animals, with as much precaution against unnecessary suffering on the part of the animals as would be exercised in equipping a hospital for human beings. The money was well spent. Many a specimen has been saved for our collection not only because it was properly treated but because it sustained a minimum of shock and suffering due to the availability of adequate means of reducing these to a minimum.

I often look back to the time when we employed our first doctor. The keepers felt that if they permitted him to get his hands on their darlings he would kill them with his queer book-learning. One keeper told me emphatically that nobody could learn anything about animals out of books. So I took him a book on the care of animals written by a man who had had many years of experience with wild animals in every conceivable way. The man had been his idol. Thus he learned how books come into being and why one can learn from them. After that he was one of the most co-operative of all our men.

Then I found that an attitude of contempt for the seeming illiteracy of some of our best men on the part of one veterinarian was causing him to treat their suggestions and reports with open scorn. This made him useless to me, for the men ceased to report conditions they found that needed attention. But year by year, as the skill of the veterinarians and the real knowledge they have acquired from experience and observa-

tion began to blend into a perfect whole, our hospital came into its own, and in only one or two instances have I had to say to a man, 'You must obey without question.' And I have rarely had to remind the veterinarian that the mental peace that a keeper can provide for his charge is far more important than medicine. Treatment must often be administered by the man who loves the animal, and with whose voice and manner the animal is familiar, or the animal will grieve himself to death in his strange environment.

Each of our three doctors has performed emergency surgery on birds requiring almost God-given skill. One was a California condor which could not digest her food. There are so few of these magnificent birds in the wild that it is against the law to catch or keep one in captivity. This one had been picked up in Ventura County with a wounded wing, torn nearly off close to the body. It had been cared for by Mrs. Keith Spalding on her Rancho Sespe until well. Then it was brought to us. In spite of our rule of not exhibiting crippled or maimed specimens, we accepted this rare bird and put it proudly on display in our cage. After being with us a year or two, it became ill and began to lose weight because it could not swallow anything. After emptying the craw several times and feeding it on ground meat and soft foods, Doctor Whiting concluded that this temporary remedy could not be repeated too often. So he decided to open the bird's stomach and find the real cause of its trouble. With the utmost care, he performed this delicate operation and discovered that a fatty tumour had closed the tube leading into the stomach to the passage of food. The tumour was excised and then it was noticed that the tube had become flat and toneless. So once a day for several days the doctor reached into the gizzard and stretched it open until it regained its normal tone. For a while the bird was kept on a milk diet. Then gradually raw eggs and ground meat were included. That was eight years ago, and we have every reason to believe that the condor will live out his normal span of life.

Another interesting surgical operation was one performed

by Doctor Whiting on a European white stork. Going through the lower canyon where the storks and cranes are kept, I noticed one day that the legs of one of the big white storks were very bloody and that the bird was walking with difficulty. I called the doctor and the birdman and they met at the pen to catch the bird for examination. They disclosed a deep gash high on the thigh, which had cut the leg to the bone. Just before releasing the bird, after treating the cut, the birdman felt something sharp against its body. Further examination revealed the greater part of a sharp nail protruding from the side of the bird in such a way that every step it took caused the nail to scratch more deeply into the thigh. The nail was rusty and corroded with blood, and the head was so deeply embedded in the flesh of the side that it could not be pulled out. The doctor took the stork to the hospital, where exploration, under local anaesthesia, revealed that the nail the bird had apparently swallowed had passed through the tough lining of the gizzard and was deeply imbedded in the strong muscular wall of the thickest part of that organ. The nail was removed, the gizzard sewn up, the wound closed, and the bird kept under observation for a few days, after which it was discharged back to its habitat, completely healed.

A more recent and equally spectacular bird operation had to be performed by Doctor Conti upon a female emu. This bird had apparently reached over the fence and caught her neck on a loose, sharp-pointed wire. When discovered, she had a fourteen-inch slit in the skin and flesh of her long neck and the trachea was pulled out completely and so torn that it was obvious that almost all of it would have to be removed. It was as seemingly hopeless an injury as I had ever seen. Nevertheless, a large part of the trachea was removed, the wound sutured with drainage, and within a few days it was possible to discontinue artificial feeding. In another month all trace of the injury was gone except a long scar where the feathers had been cut off to enable the doctor to repair the injury.

Broken bones, especially in hoofed animals, always present difficulties because these creatures are shy and greatly fear handling. One of our Rocky Mountain lambs, a fine, strong young male, broke his leg when he was only a few months old. Doctor Schroeder set the fracture, put the limb in a very stout cast and left the baby with his mother so that he could obtain the all-essential mother's milk to rebuild the bone. The lamb ran gaily about on three legs for a week or two. Then he began to touch the ground with the fourth leg also, more and more frequently. Recovery eventually was so complete that we cannot tell now which front leg was broken.

Fractured arms and other injuries to monkeys present difficulties particularly hard to solve because the monkeys will not permit bandages to remain in place for even a few minutes after they come out from under an anaesthetic. Severe injuries which make the creature really helpless are, fortunately, usually quite well healed before the victim becomes interested enough to undo what one has done to help him.

Gorillas hate the sight of anything mechanical or glittering or to which they are not accustomed. They look upon everything we carry in our hands, except food, with the greatest suspicion. Once when Doctor Schroeder walked into their sleeping quarters, where they were under observation for a slight cold, carrying a spray pump with which to administer a little inhalant, if advisable, Mbongo went into a spasm of terror. More recently he had a sore foot and the doctor tried to ease the pain by spraying it with medicine. He sprayed once, and that was all. The instant he produced his innocent little atomizer, Mbongo climbed to the bars of the ceiling and refused to come down or be near any of us until the doctor departed with his apparatus. I try to stay away as much as possible from the animals while they are being treated, especially the great apes, unless they are under an anaesthetic. This is to avoid as far as possible their associating me with any unpleasant experience. The result is a confidence in me that is invaluable in emergencies. I have been able often to get medicine down them in food or rub

something on a sore while petting them that otherwise could not have been done without force.

One of the most important cases we ever had in our hospital was the protracted illness of Mike, a nearly grown orang-outang which we secured in an exchange with another zoo. Mike was very thin and shy; the hair was rubbed off his back, and he seemed to be cowed or fearful of abuse; a condition which was understood when we learned that he had been housed in a small cage with an erratic, overbearing female chimpanzee.

We gave Mike the diet of raw vegetables, fruit, and milk that is given to all our orangs, but although he ate ravenously he did not gain weight. This fact, plus his narrow body, high chest-bones, and flat, hollow abdomen, gave us much concern. Against my own will and judgement I had put him into the cage with our young, very much beloved female Maggie. Then, suspecting tuberculosis might be Mike's trouble, I began to fear we had jeopardized Maggie by the arrangement. When the keeper rushed into my office to tell me that Mike's cage was covered with blood and that he was bleeding from the mouth and nose, I was sure my fears were well founded.

When Doctor Schroeder removed Mike to the hospital, we fumigated, cleaned and did everything we could to minimize the danger to Maggie. I will never forget poor, patient Mike, wiping the blood from his mouth with the long hair on his wrist, going willingly and hopelessly into his big crate, and as he watched the men, who were strangers to him, to see what they meant to do with him, I felt he recognized his peril and that his tractability was the stillness of fear that his end had come.

Careful examination in the hospital, however, revealed no trace of tuberculosis. Doctor Schroeder called in some of our best medical specialists, and they, too, were mystified. At last it was decided to make an even more thorough examination. To avoid any possibility of a struggle that might bring on another haemorrhage the great fellow was put to sleep.

As soon as Mike was 'under' his chest and other regions were fluoroscoped and X-rayed. While this was being done, I thought back to the time when Mike first came to us, how he had gradually begun to walk around his cage, showing a little interest in us, and how happy he had been the morning he discovered that his new mate was not again a shrieking, chattering, jumping chimpanzee, but a slow-moving, friendly, red-haired, fat-bodied young lady of his own species and kind, who tormented him and adored him; who by turns bullied him and made loving advances to him; who understood his Asiatic reticence and respected his privacy; who, silent like himself, loved to hang high in the top of the cage suspended upside down, and who, on other occasions, would sit by his side huddled under her gunny-sack shawl, never moving but enjoying the silent companionship they understood so well. The great, long body, relaxed on the operating table, seemed so like a human body that I felt almost ashamed to be making free with a creature who, when awake, was so reluctant to human touch that he would huddle in his farthest corner much of the time, his back to the wall, and his sullen eyes closed, just enduring the presence of man.

But this was not the time to sentimentalize. Mike's health, perhaps his life, was at stake. It had been our plan to carry out an exploratory operation but when the X-ray examinations proved negative, Doctor Schroeder remarked, 'It is foolish to operate when nobody knows what to operate for,' and I agreed.

The doctor washed out Mike's stomach in the hope of finding the source of the bleeding. The first lavage revealed a very slight amount of blood; subsequent lavages none. The bleeding had ceased for the present at least. The doctor's conclusion was that Mike must have had an ulcer, either of the oesophagus or stomach, which had given rise to haemorrhage and was now in a healing stage.

Mike was given a mild stimulant, wrapped warmly, and carried to a bed in a small cage, where he was left to wake up. His waking-up process was so slow that by the time he was

our zoo. The tassels of worms attached to the stomach ulcers, common to all seals, not only prevent perforation of the gastric wall but apparently constitute a healing agent. At one time many zoos anxiously sought a way to remove the amoeba found in practically all monkeys, because live amoebae can be so injurious to human beings. To-day we are convinced that monkeys need them, or at least thrive when they are present in large quantity.

So whenever we are out in the wilderness collecting specimens we study their original eating habits and the kind of shelter to which they are accustomed. We obtain droppings for analysis and note everything else that might prove of value in the care of the animal. Occasionally it is necessary even to sacrifice an apparently fit specimen that we may understand its physiology and so properly care for others. I doubt if the importance of such thorough study is yet fully realized.

Food, of course, is the foundation of success in keeping specimens alive and in good condition. To provide at least a suitable substitute for the animal's native food is essential. I shall never quite forgive my own stupidity for not thinking of green alfalfa as a substitute for the tree leaves upon which a group of leaf-eating monkeys exist entirely in the wild. These little monkeys were brought with a big shipment from the Orient and had enough leaves during the voyage. But it became necessary to wean them to another kind of food, if they were to live in captivity. Our man tried, during the entire voyage, with little success, to get them to eat fruit and other articles we would be able to provide. They just sat huddled down, refusing everything but their leaves, which could be neither imported nor grown here. They were so patient with us, on arrival, that it was even more pitiful than if they had refused our food as would most leaf-eating monkeys. Every morning, when I walked into the room where they were in quarantine, they would rush to the side of their cage and eagerly taste every different species of leaf I brought. And then, when it was just too late, I thought of

alfalfa. Going to a big dairy ranch in the valley of Mission San Diego, I asked permission to gather some. I was told to pick all I wanted. How those monkeys did go for it! I have never seen anything eat so much food for its size as did the two little ones who were left. But, although the alfalfa prolonged their lives for a short time and made them happy and satisfied while they lived, I had found it too late.

Improper feeding is not, alas, always as easy to diagnose as the case just mentioned. Animals will eat, with apparently normal appetite, food in seemingly sufficient quantity and yet autopsy will reveal malnutrition or actual starvation. Sometimes improper diet is indicated in other ways, such as skin lesions, swellings, or convulsions. One of the most stubborn cases to diagnose and cure was that of Marie, the baby walrus, who was always eager for food, ate with relish, and yet after a few weeks with us began to show an alarming increase in a few scaly patches and sores which had been slightly evident when she arrived and which we, like the crew of the *Stranger*, attributed to insect bites, too much sun, and, finally, perhaps to lack of ocean water.

Although unable to obtain the true content of the milk of any sea mammal, Doctor Schroeder was nevertheless convinced that Marie's diet was deficient. So he added butter fat and fish oils to her milk. He also moved her into closed quarters where she was protected from sun and flies. But her troubles multiplied. Her eyes became swollen and inflamed. her flippers swelled at times frighteningly, and her body, except in small patches, was totally devoid of hair. Careful laboratory tests revealed neither fungus nor mites present externally, or parasitic eggs or protozoa present in the stool. We had also tapped all sources of information in regard to the diet of the walrus in the wild, with little help forthcoming.

Finally Doctor Francis Smith, a member of our advisory research staff, suggested milk-hypersensitivity as the probable cause of all her troubles. Doctor Schroeder admitted that this diagnosis seemed logical and took away even the small

amount of the milk she had been getting, without subjecting her, in her miserable condition, to further tests.

Her bottle-feeding now consisted of an emulsion of finely ground salmon or other rich fish, fish oil, salt warm water and calcium phosphate. The relief was almost immediate. Her flippers ceased to swell after each feeding; her eyes opened, and after a few months the skin lesions had completely healed, leaving scarcely a scar. Her wrinkled hide filled out and she gained weight rapidly, at first on the same quantity of food she had received when she arrived at the zoo.

As soon as possible we weaned her from the bottle, substituting 'mock clams'. These were actually small cubes of boned fish soaked in fish oil, and rolled deep in powdered clam shell. She was fed about three times a day, her meals consisting of ten pounds of such food. Emergency calls for the doctor completely ceased, for Marie became one of the healthiest creatures in the zoo, gaining weight steadily and growing rapidly.

This interesting case of allergy to milk attracted much attention and later appeared in the *Journal* of the American Medical Association as a joint contribution from Doctor Smith and Doctor Schroeder.

Before the hospital was built and even afterward there have been animals that have had to be housed temporarily in highly heated quarters, or in unheated quarters, during a period of transfer from one cage to another or during an alteration of their own cage. So year after year my office has been turned into an emergency ward or a convalescent home. First I had a baby kangaroo, then Niño, the dear little galago; now and then baby monkeys or marmosets; and one whole winter I housed our first black cockatoo. He was a gorgeous bird, rare and costly, and I was willing to sacrifice much that he might be in our collection. But I was very worn out with his constant shrill whistle before he was transferred to his permanent home.

One Christmas Eve, before we had a resident veterinarian, when I had been hoping for a real holiday—the first Christ-

mas in my experience when something at the zoo had not demanded my personal attention—an employee remarked casually, as he was leaving, 'One of the big Galapagos tortoises looks sick to me. He is all stretched out on the ground.'

Startled, I asked, 'Where is he?'

He told me.

'Come on,' I said, 'help me bring him in.'

The lad must have wished he had not spoken, for it was already dark and he was anxious to get away. But he went with me and between us we managed to get the tortoise into a wheelbarrow, in which we pushed him into the office. He was cold and so lifeless that I thought he was dead.

We tugged and pushed him out of the barrow and on to two chairs that we placed on either side of the floor furnace. His body was like a bridge joining the chairs. The boy then left and I stayed on alone, turning him over and pushing him around as he began to respond to the warm air. Little by little I worked the chairs towards each other until they were so close together he could not fall off. Then, for a quick stimulant, I fixed up a dose of medicine that still makes me smile. I poured a tablespoonful of pure alcohol into a cup and filled the cup with mineral and castor oils. After turning the old fellow over on his back, I held up his head, prised his mouth open with the handle of a toothbrush, and poured the awful mixture, slightly warmed, down his throat. The tortoise was either too dead to care or he liked it. He swallowed most of the mixture. Then I became afraid that, in spite of the chairs being close together, he might fall off. It was utterly impossible to lift him to the floor. So I pulled a drawer out of my desk, slid him on to this, and from that to the floor. Then I pushed him as close to the furnace as I could, and tipped the two chairs so that their backs made a fence to keep him from crawling on the furnace and being burned. After that I, too, went home. It was nearly eight o'clock and all possibility of carrying out the plans I had made for Christmas Eve had vanished.

Early Christmas morning I went down to see the patient.

I had worried all night and knew, before opening the office door, that I had done the wrong thing, that I had probably poisoned the magnificent fellow and should find him dead, killed by me probably. But fate was more kind than I deserved. 'Number 36' held up his head and looked at me. He was not well yet, but he had strolled all over the room and what a mess it was! But his breath was no longer the laboured, harsh whistle of the night before. It was coming easily now, his nose was running, and his cold was broken.

It would not be fair to conclude this chapter about our zoo hospital without a few words about the doctors who have served us in that institution. Dr. R. A. Whiting, our first regular doctor, was preceded by part-time men and by the donation of services on the part of our local veterinarians. They gave us gladly and freely of their time. In those days the zoo was so young, and had so much to learn about building cages and caring for specimens, that some of the most desperate emergencies and severe injuries that we have had in the hospital were taken care of successfully by these veterinarians and I feel deeply grateful to them for it.

Doctor Whiting, a graduate of Cornell, had been Associate Professor of Animal Pathology at Purdue University for seventeen years before coming to us. He served us for four years and his skill in treating animals has left its mark upon our collection. He was followed by Doctor Schroeder, who got his doctor's degree at the University of Washington. It was on the recommendation of Doctor Howarth of the Agricultural Division of the University of California that I made contact with Doctor Schroeder, who was then at Lederle Laboratories and was already highly regarded not only as a veterinarian, but as a pathologist. He has demonstrated his skill as a physician and surgeon for animals numerous times, but his particular value to any institution is his zeal for prevention, and his interest, not in the sick animal alone, as is so often the case, but in the normal healthy specimen with which we as an institution must be most vitally concerned.

After being with us five years he was paid the compliment of being called to the Bronx Zoo in New York.

We then secured the services of Dr. L. F. Conti, who was on the staff of the Health Department of Los Angeles County. Doctor Conti was a man of long experience and had established an excellent reputation for his knowledge and skill in treating diseases of swine. Upon his resignation, after two and a half years of service, we turned again to Doctor Schroeder, this time for aid in obtaining another veterinarian to take charge of our hospital. Knowing that his family was longing for California, we indicated that of course we would be most happy to have him return. We have felt a great deal of pride and satisfaction in his willingness to do so. We feel that perhaps here, in a young institution and a zoo that still has much of its reputation to achieve, he will have an opportunity to make a contribution to veterinary science that is unique. He combines with his excellent training and native skill a bubbling personality, a vigorous physique, and an enthusiasm rarely present in one individual. We hope that his return to our institution indicates an intention of staying with us.

The zoo hospital is a wonderful and comforting place. I want to keep it empty and we do that as much as we can. In this effort I have the full co-operation of Doctor Schroeder, who likes animals much more in their exhibition cages than he does in his hospital. But just when I begin to think we have conquered the most obvious troubles that come to animals in captivity something happens that makes me thank our founders for including a hospital for the animals in their earliest plans and pushing ahead to establish it while we were still a young, small zoo. Through their forethought I am able to rush to a telephone, put in an emergency call, and say, 'Oh, Doctor, please meet me quickly at the leopard grotto; two of the cubs are sick.' When he arrives, I can put the poor little creatures into his trained, competent hands, confident that everything possible will be done to restore them to health. But more than that we have the means with

PART 8

Something about Construction

CHAPTER XXXIII

'A Machine to Live In'

1. BUILDING TO SUIT THE TENANT

Very few people who have written on life in the zoo have gone into the interesting matter of zoo construction. One of the phases that surprised me most was the detail and the vast amount of difference between the cages required for such closely related specimens as two carnivores or two birds. Some of our cat groups were exhibited in big grottoes with neither bars nor a top; others were housed in great cages with heavy, strong mesh wire on all sides and over the top. Some contained large tree trunks with heavy limbs and others mere logs on the floor.

Not until I had been in the zoo for a year or more did I realize that there are three important elements in the building of wild-animal cages, namely, construction, the nature of the creature to be exhibited, and showmanship. Showmanship consists of suiting the animal and its surroundings so perfectly that its 'captivity' is almost wholly forgotten. This is accomplished by providing the animal with articles it would use in its native habitat. When furnished with these, it indulges in natural social behaviour and puts on a good show. No amount of training or teaching ever creates the entertainment offered by a wild animal left to its own devices, particularly with creatures of its own species.

In preparing an animal cage, therefore, both security and physical comfort must be thought of. Before actually starting our zoo, we explained to various zoos that we hoped to build an outdoor zoo and asked for information about their open

grottoes. We obtained much guidance in this way, but because our problems, both climatic and topographic, were so different from those of the average zoo, we were forced to experiment. For example, moat grottoes were being tried by the Hagenbecks and by one or two other zoos for bears. We decided to use them for our lions and tigers. Neither can leap very high off the ground without a preliminary long run. Doctor Wegeforth, by writing and talking to people who had hunted these beasts, learned that they could jump upon the haunches of an elephant, and, from a crouching position, could raise themselves perhaps two or three feet off the floor. On this basis, he decided that the grotto floor should consist of shelves not more than four or five feet wide, with the drop from shelf to shelf two feet or more. The moat was to be eighteen feet wide, its outer wall (from the top of which the public would view the lions) twenty feet in depth, and its inner wall (the top of which would constitute the lowest ledge of the grotto floor) fourteen feet high. Should a lion or tiger ever attempt to leap the moat, he would have to raise his body to a height of not less than six feet and jump forward a distance of twenty feet. He would not be able to get a long running start in order to leap, but would have to cover a series of short runs on the various ledges, at the edge of each of which he would have to pause to lower himself to the next. All of these precautions were carried out and both the lions and tigers now occupy grottoes of this nature.

Many new lions and tigers have been introduced to our collection but not one has ever attempted to leap the moat, and, of course, those born in the grotto have known no other world and therefore have no desire to escape. These cats do not climb by habit, but like to stand upon a heavy log and wear down their long claws by scratching it. For this reason there are logs lying in the grotto. The animals also like to have something that will partially shield them from the public. When lying behind the logs they can, by opening their eyes, see the public without the public seeing more of them than the tips of their heads and ears.

The bears are housed in grottoes quite similar to those of the lions and tigers, except that their floors are unbroken by shelves, and there is not so great a difference in height between the outer and inner walls of the moat. The bears, being plantigrade animals, do not jump so easily as the heavy cats. Each of the bear grottoes is equipped with a pool, the bottom of which slopes from the front of the grotto towards the back, giving the water sufficient depth in the rear for swimming and diving while the shallow water in the front invites the cubs to wade. The polar bears and the Kodiaks both like to dive, so they have deeper pools with higher banks around them to give them greater sport.

In the rear of all the grottoes there are caves that open towards the front so that the animal may lie within, knowing that nothing can approach him except from one direction. This sense of security means a great deal to animals in captivity, enabling them to relax completely within a few feet of human beings, safe from approach in every direction except the one towards which they face. We have followed this plan, also, in the caves for seals.

The grottoes for the leopards, puma, and others of the lithe-bodied climbing cats must be of a very different construction than those for the ground-dwelling lions and tigers. As these fellows seldom lie upon the ground, they must be provided with trees equipped with limbs along which they can recline, just as in the jungle while waiting for their victims. So we have erected cement trees with comfortable wooden slabs on the top sides of heavy limbs. Their cages are completely enclosed with heavy wire, for these cats can spring eight or ten feet from the floor. Any slight roughness or break in the walls offers a toehold from which to leap farther and eventually escape. Their houses are built three feet off the floor with caves underneath so that these slinking nocturnal creatures may feel hidden while really visible.

Instead of building the structures known as primate houses, bird houses, and so forth in the conventional zoos, we have grouped together cages fronting towards the public,

built around a hollow square, with the sleeping enclosures towards the back. This idea was originated by Doctor Wegeforth, and has been most satisfactory and economical. Within such a structure is a large enclosed area, covered with wire, which might be termed a patio but which we call a service yard. Here is built the food house, with some storage room and a workshop to take care of the animals in the series of cages. There are also groups of separate cages built in the service yard for confining single specimens needing certain attention, or treatment. The area is sheltered from the wind but open to sunshine and fresh air.

The only real house in our zoo is the snake house, and even it is built on the hollow-square plan. At present this and the hospital are the only places where heat is provided. But a similar structure is now being completed for the tiny mammals that are difficult to acclimatize completely, and especially for the nocturnal animals, which we plan to exhibit even when asleep, and we believe that they may become at least partly diurnal in their habits. We are also contemplating the construction of a group of cages in which to exhibit rodents even smaller than squirrels, and one of our most peculiar situations has arisen with regard to water. The only way to keep many small desert rodents alive is to keep water from them. Whatever moisture they need comes from fleshy food such as cactus, carrots, and lettuce. So their cages will lack drinking fountains, but every other cage in the zoo has a drinking fountain with a stream of fresh clear water constantly flowing through it. Animals are instantly suspicious of stagnant water, and, except in dire emergency, refuse to drink from pans or pools that have not a continuous flow.

A series of twenty small arched cages, with the tops partly enclosed, and a high shelf in the back, serves well for foxes and small miscellaneous carnivores. Foxes run up the sides of wire cages or leap into trees with as much agility as small cats, and seem to enjoy a similar sleeping-room.

Small carnivorous animals need a real sense of security. So shelves have been provided in lieu of the crotch of a tree or

ledge of rock that they would select in the wild. They like to spend their time sleeping cosily on these, unaware of their visibility to the public as lovely balls of fur.

Years of experience have taught us that floors of wood are impractical because of the absorbent quality of the material. The only way that animal structures can be kept sufficiently clean and sanitary to maintain animals in health and without sores is to have floors of hard-finished cement. In the cages of animals that must have soil, we frequently put sand on top of the cement and change it often. This prevents saturation of the earth beneath with chemicals, moisture from food, and animal excrement. In the case of swine, who must have earth upon their food, we have provided a dirt pit in the back of their house. Here they are fed part of the time and are free to wallow and root as desired. The dirt is changed periodically to avoid odours. One of the compliments we most often receive is on the lack of animal odour throughout the zoo.

Rigid wire is not satisfactory, especially for animals with hands, like monkeys. They will push and pull and work at it, not in an effort to escape but because it fascinates them, until suddenly a whole section breaks loose because of crystallization at the site of union. All cages that must be covered with wire are covered with chain link, which is flexible, versatile, and so heavily galvanized that it is impermeable to our damp, salt air. Wire that is galvanized after it has been woven is far superior to wire woven after it has been galvanized. In the latter type, a break sometimes occurs in the weaving which lets in rust. We are looking forward to the day when it will be possible to replace much of the rough galvanized wire with smooth and lovely stainless steel.

In the early stage we were satisfied to construct our walls of tile or tile-brick. But when Jiggs, as I explained earlier, obtained some tie wire from her cage and dug out plaster until she had removed a section we substituted reinforced concrete for tile in building walls. The cages of the orang-outangs must have wire not only bolted into place but welded, and the nuts must all be on the outside of the cage. The

floors and edges of the shelves must be covered with heavy steel plates to keep the inmates from biting out chunks. Their cages, as well as those of the gibbons, are equipped at the very top with an intricate maze of pipes so that they may swing from bar to bar by the hour and unconsciously put on a beautiful show.

We had no knowledge of gorilla character from first-hand observation when we built our gorilla cage. All the gorillas, with the exception of one or two in Europe, had been infants, and the strength they might develop in maturity was an unknown quantity; therefore, when we built our gorilla cage, we constructed it of the strongest steel possible and covered it with specially woven chain-link wire of four-gauge steel, the heaviest obtainable. We built the walls and floors of heavy reinforced concrete and fastened the wire to the frame, not with a tie wire as in other monkey cages, but with heavy steel bands bolted through to the I-beams every four inches between the spaces in the heavy chain link. These precautions may sometime stand us in good stead, but in the nine years the gorillas have lived in the cage they have never broken, or taken apart, anything.

The cost of the gorilla cage was about six thousand dollars, not including the salaries of several construction men always on our pay roll in the maintenance department. The cost of building a group of cages such as our monkey-cage group—a series of thirty-seven cages built around a hollow square with sleeping-rooms provided for each animal—averaged approximately one thousand dollars a cage, and our great flying cage for the eagles and other birds of prey was erected at a total cost of fifty-seven thousand dollars.

Many of the largest expenditures in the building of a zoo are for items which cannot be seen and are not thought of by the average visitor. I refer to water pipes, ventilating, and electrical systems, inter-department telephones; and greater than all the rest has been the cost of our industrial centre. This is a group of five buildings, comprising a hay storage barn, implement and machine sheds, a warehouse and an ice

plant for the preparation, storage, and distribution of food, and a workshop where all carpentering, electric welding, and metal work are done. Last but not least may be mentioned the greenhouses and nurseries, where delicate tropical plants are raised and brought to the stage of final planting. These are an important part of our industrial centre. The outlay for building this central plant was in the neighbourhood of one hundred and fifty thousand dollars, without counting movable equipment.

The original cost of the hospital building was fifty thousand dollars, plus seventeen thousand dollars for equipment. To this had to be added another fifty thousand dollars when we realized that freshly received specimens did not belong in a building with specimens that were really ill, and that out-of-door cages or units and a quarantine station must be built adjoining the hospital, for their proper acclimatization. The quarantine station consists of a large central area with big and little cages of wire and concrete on each side, large pens and closed stalls, small cages for small creatures, pools for sea mammals and sea birds, and stocks in which heavy animals with broken legs can be suspended. In each large cage there is a lesser one separated from the main cage by a sliding panel. In the small cage the animal can be squeezed up in such a way that a restriction is distributed to its whole body, an opportunity thus being provided for the administration of sedatives and anaesthetics when required.

2. A DREAM COMES TRUE

In my early bookkeeping days, I had little thought of the significance of building materials or the uses to which they were put, but when I had to learn the groups of cages to which supplies pertained I gradually became familiar with construction. I also watched with admiration the efforts of Doctor Wegeforth to get all the salvage material he could from the city of San Diego, and how he made the most of it. For example, he used discarded water pipe for fence posts.

He would coat them inside to prevent rust, cap them with cement, and then brush and paint them carefully.

Then one day I met the Doctor out in the garden while I was taking my lunch hour and he said, 'Come on, I want to show you something.' That was my first walk with him and we went down to where a seal pool was being built. He explained what he wanted the place to be and where and how each stone and post must go. He confided his dream of a zoo that would be peculiarly fitted to the rough hillsides and steep canyons of our section of Balboa Park. Since then we have laughed many times about drawing plans on the ground so that we might change our minds conveniently as the structure rose.

As months passed I walked more and more often around the grounds with the Doctor and with members of the Board of Directors and finally I, too, began to dream dreams and have visions of what I should like to do.

I found, also, that as I took distinguished visitors around the ground I began doing something I had laughed at the Doctor for doing. I was showing spaces where we *planned* to build, instead of cages already built, and I heard myself say from time to time, 'I need this or hope to have that, but it is not exactly included in our plans.'

One morning, a day or two after an extremely pleasant visit from the great bird-lovers Mr. and Mrs. Keith Spalding, I received a personal letter from Mrs. Spalding. Expecting it to contain only the usual polite 'Thank you', I was almost overwhelmed to have a cheque for four figures drop out. The instructions were that it was to be used for some of the things I personally desired more than anything else. So Doctor Wegeforth permitted me to build a group of parrot cages which had been badly needed but which could not be included in that year's budget.

I have had several smaller donations of just such a personal nature which have enabled me to procure photograph albums or to have the *Zoonooz*, our monthly journal of zoo news, bound, and to carry out other similar enterprises

Photograph by Passmore

A dream comes true

that always seem to be crowded out of the budget by limited funds.

One cage especially intrigued me from my first visit to the zoo, before I ever imagined working there. It was a great cage for shore and marsh birds called the 'Scripps Flying Cage'. It was built over a steep barranca or ravine. The top was about twenty feet above the peak of the hill and was kept on a level line. The sloping hillsides increased the actual height of the cage until, at the lower end, its actual height was more than one hundred feet. Tall eucalyptus trees and low shrubs added to the beauty of the setting and to the comfort of the birds. Two pools connected by a trickling stream were always filled with flamingoes, herons, and egrets; shy rails scurried under the brush, and in the spring the swaying trees were filled with nests.

I had said many times that if there were any creatures I felt sorry for they were the great birds of prey. They were comfortably housed, but I longed for them to be able to soar. So I walked about and studied the grounds until suddenly I found the place that would be perfect for the construction of another cage like the first in which to segregate the birds of prey. When I had a good chance, I walked Doctor Wegeforth to the brow of a hill looking down through a shallow barranca to the tiger cage below.

'Did you ever think you would like to use this hillside for anything?' I asked.

'No,' he replied, 'why?'

I told him how I would like to build a flying cage there for the eagles, hawks, and vultures. He studied the ground and looked across towards the other cage and said encouragingly, 'That's a swell idea. We'll do it some day!'

'Some day' seemed a long way off. I knew that the initial investment in the cage they then occupied had been at least twenty thousand dollars and that several thousand more had been spent for paving and terracing. But during the past few years, when much of the labour for such buildings has been offered free of charge, we have seen our zoo nearing comple-

tion. And among its enclosures is the great flying cage of which I dreamed for more than ten years.

While we were building it everybody seemed rather sceptical of its success, calling it in a tone of banter 'Mrs. Benchley's cage'. But early in March 1938 the birds were turned into it all at once. They soared through the air as I had hoped they would. There was some trouble until they got adjusted to so much room, and there were a few near tragedies, as when a bird would strike hard against the cage and drop to the floor as though dead, but actually only stunned. But there was no more fighting than if the inhabitants were pigeons or small finches, and when, at last, a family of ravens nested and raised a family of four babies, even teaching them to fly, in the enclosure, as described in an earlier chapter, I felt that 'Mrs. Benchley's cage' was a success. My dream had come true.

PART 9

Big Killers: The Cat Family

CHAPTER XXXIV

In Defence of Cats

One of the signs along a path leading into a deep canyon reads: 'CATS—DOGS—SWINE'. People sometimes pause to read it with a smile and wonder whether or not to follow the trail to the exhibit. They do not realize that 'cats' include lions, tigers, jaguars, and leopards, and that 'dogs' embraces hyenas, jackals, wolves and coyotes. Actually these were left-overs among the cats and dogs when our ancestors selected from the beasts those best adapted to their needs as servants and friends. It has been impossible, even with the development of modern scientific agriculture, to improve upon these early selections. The little advance that has been gained has been only through selective breeding from the original species. In other words, there is in the world to-day no better creature for the needs of man than the sheep, horse, pig, cow, dog, and cat of the species first selected.

It is difficult to convince people that the wild animals will not make acceptable pets, and that they are not the ancestors of our domestic animals any more than the savage races of modern times are our ancestors. It is true that rare individuals among all species will make good pets, when handled with experience and skill, for vast character differences abound among animals, wild and tame. But wild animals make dangerous pets even when handled with skill. This does not mean that they are inherently vicious or wicked, or should, in general, be exterminated. When great carnivorous animals develop bad individuals among the group, those and not the race should be destroyed.

Of course, when you invade the privacy and infringe upon the rights of wild animals it is time for you to look out. You are no more within your rights, nor should you receive any more mercy or consideration, than the burglar who enters your home with intent to kill if necessary. When people ask, as they do daily, 'Which is the fiercest, the panther or the tiger, the lion or the leopard; which would win a battle?' I know that the question has been prompted by some motion-picture thriller which they honestly believe was taken in the wild, instead of having been staged on a movie lot in Hollywood. When I reply that such creatures would not have occasion to fight in nature, that their paths do not cross, and that if they did, accidentally, in quest of food and not of excitement, each would probably retire promptly and silently from the scene, leaving to the other a clear field of operation, the statement is looked upon as an inane evasion of the question.

The great cats kill only for food or to protect themselves or their young. The puma, only representative of the big cat group in North America, does at times slaughter just for the fun of it, leaving much of her kill uneaten; but such slaughter is almost wholly confined to domestic herds of sheep, goats, or calves, and is a trait of individuals, not of the species generally. Seldom are there authentic tales of these lions, the most treacherous and dangerous of all cats, stalking human beings or farm animals except when their own territory has been invaded by herds, or when deep snow or drought has made food so scarce that they are crazed by hunger. Mothers with young have especially gained a bad reputation for wanton killing, for most of the lions hunted by dogs have been found to be nursing mothers.

The San Diego Zoo was the first even to contemplate showing great cats in the modern type of enclosure that I have already described, but it has proved so eminently satisfactory that the newer zoos are going even further in showing great cats in natural settings. The straight high walls of our grottoes are painted the colour of our red-clay soil and covered with blooming, overhanging vines to conceal the

cement structure. Tropical plants hide the outside and nothing apparently but space separates the beholder from the huge animals not forty feet away. It evidently looks dangerous, for many visitors come into the office demanding that we do something about it.

Cleaning and fumigating are not a serious problem when animals are kept in open grottoes, but in the old type of zoo, with small cages and wooden floors, keeping the big cats clean and their skins from breaking out in sores is a real problem. Many disinfectants are based on coal-tar products which burn deep into cats' hides and make their feet sore and tender. The cleaning of the cat cages is usually done with hydraulic power from the outside. Once or twice a month, however, we sprinkle some chlorinated lime on the floor of the cage and scrub it around to reduce odours. Then the big hose is turned on it and the cage washed off. As a rule, however, the great cats are very much like house cats, being very careful to evacuate near the edge of their moat, so that all refuse drops out of sight.

Food is, of course, the basis of health in cats as in all other animals in captivity. In the wild all great cats gorge themselves and then fast until hungry again. This is not possible in a zoo, where their activities are limited and they do not have to hunt for food, and where they are expected to offer some entertainment to visitors. So each cat is given from ten to fifteen pounds of meat, bone, entrail, skin, and hide every day for six days and is fasted on the seventh. This method is used in all zoos. Some give them milk on fast days but we prefer a complete fast on one day out of seven.

We have been very fortunate in being able to obtain horse meat from our rural communities. Injured or worn-out old horses who would suffer if permitted to live are the entire source of our supply. This meat is cared for in our own abattoir, frozen in our own ice plant when we receive more than we need, and all of it is carefully tested and handled to prevent the transference of any disease or filth to our valuable animals.

In the wild the great cats lie in wait along the trails to water-holes. There, late in the afternoon when the deer, antelope or zebra comes to take a long drink before retiring, the kill is made. As I explained before, the cat or dog tears his way straight into the warm vital organs newly filled with food, and thus obtains from the actively functioning organs of the victims the carbohydrates and digestive juices that he needs for his own well-being. So in zoos, oils, chemicals, and bone meal are added to muscle meat. Whenever possible we give meat filled with blood, and utilize all of the vital organs, including the stomach and intestinal wall. Blood alone is also used, as is the marrow from the shin and soft rib bones. Meat is of such vital importance in keeping carnivorous animals and birds healthy in an artificial environment that very little, if any, is wasted.

The great cats, like all our animals, are fed in the seclusion of their sleeping quarters. Our only sure method of control in our large open grottoes is that the animals, as soon as the sliding doors into their inner quarters are opened, rush in, expecting food. The door is then dropped and the animal fed, moved, or examined as we choose.

All animals are shut up singly and securely at night, first to prevent any attempt to escape, and, second, to prevent their being molested by visitors who remain late in the zoo or enter without permission. Another reason for this procedure is to prevent trouble between members of a family over food or some other cause. The appearance and smell of their food immediately make all cats—even frolicsome kittens playing together—revert to that wild law of self-preservation in the face of a limited food supply. For this reason mated pairs of cats or brothers and sisters more than four or five months old are never allowed to eat together, but are safely shut away or fed simultaneously at the far ends of a forty-foot room. The locking up of all the animals also gives the men an opportunity to effect necessary repairs and to clean or sterilize the outer cage without danger to themselves and without losing time in driving animals back out of sight.

Medicines are at times difficult to administer, for many drugs which seem excellent for use with all other carnivorous animals are deadly for cats. Much can be done for them with the proper feeding schedule, but when they must have medicine we have found that they will gulp it in liver without knowing they are taking it. Young cats while being taught to eat bones are often given cod-liver or halibut-liver oil on their rib bones or meat twice a day, and they relish it. I have seen some piggish little cats lick all the cod-liver oil off their own red bones and then go over and try to take the bone of the second baby, who was saving his delicious oil to the last.

CHAPTER XXXV

Simba, a Captive

Of all the big cats, the lion is in many ways the most common, the most successfully exhibited in zoos and circuses, and still the most popular. Few lions are now captured and brought from the wild, for lions are born in all zoos, and great lion farms, exhibiting hundreds, thrive in America. Out in the wilds of Africa you would probably never encounter any lion as handsome as those exhibited in zoos. Lions in the wild cannot live their life of hunting through thorny bush and preserve their magnificent manes.

Our own pair of lions are native children, not only of our zoo but of our grotto. Each was born there and it has always been their home. They were born of one father but of two mothers who were purchased at the time the zoo was opened, then full-grown handsome specimens. The very first pictures of the father show him with a full mane, extending—as does that of his son—clear back to his haunches, hanging seven or eight inches long for the entire length of his belly. At the end of nineteen years with us he was so old that he was stiff and his teeth would no longer permit him to consume his meat properly. Then, long after he would have been killed in the wild by his own kind or his natural enemies because of infirmity, we gave him a merciful release from life. But there was not a blemish or scar on his entire body and the hair of his mane around the head was fourteen inches long in places. His son is equally handsome now in his very prime at twelve years of age.

The original pair of lions raised forty-two cubs in a period

of nineteen years in the zoo. Their largest family was five cubs, their last a litter of two—one of them a weakling that lived only a few days. Although there is no novelty in producing lion cubs, there is nothing cuter or more attractive to the public than a family of huge-footed, long-legged, big-headed babies just losing their spots, especially when they can live in a big open grotto.

Careful records of gestation periods and breeding dates are kept of all our animals. A couple of weeks before lion cubs are expected we prepare the inner sleeping quarters with fine bedding and shut up the female lion. She is given the run of two of the sleeping-rooms, eight feet square, with open barred windows in the rear. Usually three or four days before the cubs are born she refuses to eat meat. She may accept a little milk, but not infrequently refuses everything except water. When she does this we know it is time to close the window with a steel shutter. The birth of the cubs is discovered only by listening and peeking through the keyhole.

When the cubs are forty-eight hours old the mother becomes restless and moves back and forth through the open door between the two rooms. Then we boldly open the steel shutter and peer in, trying to count the litter. Often there are three, but four and even five are not unusual. The mother is given a little liver and milk, but after a few days she desires something into which she can really sink her teeth—a bone to gnaw. So she is soon back on regular rations. During this time she shows more than her usual dislike of human beings, but after the first week it is not difficult to shut her in the second room while we enter the first and enjoy the cubs.

A baby lion's body is covered with big brown spots, which he retains until he is six months old. The hair is soft and woolly, of a colour similar to the general background of the parents. For the first few days we are very careful not to touch the cubs with our hands. Should the bedding need changing, we pick them up in a bundle of straw. The man smell might prove fatal, especially with a young mother and her first litter.

By the fourteenth day their eyes are open and their weight has increased to about two pounds. Most of their time is spent nursing or sleeping, pushing with their huge paws against their mother's side just as kittens do. They are always kept very clean by their mother's rough tongue and are frequently given a massage by her. This not only keeps their bowels in good shape but acts as a muscle-builder in a manner difficult to copy when one has to raise a baby cat of any species by hand.

When the cubs are two months old they are tempted by the mother's supper, especially if it is freshly killed meat dripping with blood. Presumably they have learned to like the smell of it on her lips as she licks their little faces after eating her meat, for when we have raised any of these cats on the bottle we have had to teach them, later, to endure the taste and smell of meat. We have to be very careful about offering them any change of diet. Cod-liver oil, viosterol, and egg yolk are given in their milk from the first, then a little bone meal is added to ground fresh meat and placed near by for consumption when hungry, or perhaps we pet them immediately after handling such food. When they lick their coats clean they get a taste of it, and finally decide they like it a little. Next we place a little milk and meat together in a pan and gradually they lap and chew. As soon as they have learned what their sharp milk teeth are for, they are given their meat on a bone. It would be dangerous to give them a piece of solid meat at first. They would not stop to bite off a fragment small enough to swallow but would bolt the whole portion and probably choke to death. So all the baby meat-eating animals are given first a little ground meat a nd then a bone, preferably a heavy rib bone, with some meat attached tightly along the edge. They settle right down to it, growling fiercely and holding it with their oversized feet, worrying and killing it and gnawing and pulling off tiny morsels of meat until they have satisfied their hunger.

Little cats, raised by their mother, nurse as often as they wish at first, but after three or four weeks the mother begins

Photograph by F. C. Wahrenbrock

Family portrait

to leave them alone for an hour or two at a time while she crawls high up on a sleeping shelf which they cannot possibly reach. The cubs then sleep or roll around, and sometimes fuss and cry, but she heeds them not. They are getting exercise for their bodies, especially the lungs. In the wild she would not have to resort to this subterfuge for keeping away from the cubs; she would be out hunting food for several hours at a stretch and they would naturally be forced to care for themselves for a while.

It is neither an easy nor always a pleasant task to raise baby animals on the bottle. They are fed very little, but frequently at first, to prevent big stomachs and digestive disturbances caused by overloading and gorging. Day and night the feeding programme must go on. When they have been reared to three or four months and are slim, symmetrical, and regular in their habits, one has really accomplished something worth while.

I am convinced that the baby cat is born with the art of hissing and spitting. Even before its eyes are open, no matter how much you handle it or how friendly it seems, it always opens its little mouth wide and snarls and spits even while purring deep down in its little throat. Great cats purr just like house cats. The purr sounds like a run-down electric motor, but it is the sweetest music that the great tawny mother can make for her nursing cubs as they drop off to sleep, letting the big nipples slip out of their relaxed lips.

Every cub has the instinct to play, and baby lions, tigers, and leopards play just like domestic kittens, hiding and jumping out from behind drinking fountains and columns on each other, chewing, rolling, pulling, and dashing madly at imaginary enemies. This is exercise, and the more active and aggressive the cub the healthier he is when grown. The mother takes little part in these activities if there are three or more babies, but if there are only two she watches carefully to see that the smaller one shall not get all the pummelling. She does her share with the bigger cub so that he, too, will have his stomach and bowels adequately kneaded and his

back muscles properly massaged. She rolls the larger one over and over, pushing, biting playfully, and sometimes driving him into baby rages just as he does his younger brother or sister.

We have had seven or eight very successful lion mothers, one tiger, and one puma mother. Each has raised successful litters. Our two black-panther females have raised some of their babies and have refused to raise others, born apparently at unseasonable times of the year. The two female leopards have had to be dealt with differently each time they became mothers. They have also been very different from each other in all their reactions to family life. But in general the same pattern is followed by the big cats.

In zoo families, just as in our own, tenderness towards the weak and helpless is attributed to the female. Now and then, however, we have fathers who show as great tenderness and solicitude for their young as do the mothers. The most interesting exhibition of individual fatherly tenderness is that shown by our great black-maned lion when his mate and her brood are turned out to enjoy his company in the outer grotto. The first time we turned them out was accidental. One of the little cubs, when about ten weeks old, squeezed through bars in the back of the cage separating one of the sleeping-rooms from the other and was with his father before we knew it.

When the keeper realized this his terror was pitiful, for he believed implicitly in the tradition that no male lion will tolerate his cubs. But when he saw that all was peaceful, that the old fellow was merely interested and curious, he began to coax me to turn the whole family into the grotto together. Finally we did, with the happiest result of any experiment we have ever tried.

When he saw not one but three children one morning, the big fellow was amazed. The mother, a little nervous, stood guard, threatening him if he approached them with other than friendly intention. He scarcely knew whether to advance or let them come to him. At last he decided upon the latter

course, and, walking to his favourite ledge, stretched full length in the morning sun.

The babies drew back appalled by the bigness of the outdoor cage and the shaggy monster they could not know was their father. But Prince lay so still that soon their adventurous spirit began to urge them to explore. One behind the other, sniffing, growling, they went up and down, approaching nearer and nearer to the big beast. He lay apparently asleep, but an occasional sharp twist of his tail indicated his wakefulness. Suddenly one of the cubs noticed the waving tassel and lunged at it. Missing, he landed with all his might upon his father's leg. The mother bounded forward, instantly ready to rescue him if necessary, but the little one was in no danger. The father pretended not to have been touched, and drowsed on. Seeing this, the other two cubs joined the first, growing bolder now, and soon all had surrounded their father and were playing hide-and-seek around his large body. Finally, becoming tired with the unaccustomed exercise, they snuggled one by one beside the great brute. He raised his huge paw and laid it gently across the body of his little daughter, as though to hold her on the ledge.

At feeding time the little scamps hastened ahead of him into the back of the grotto where food had been deposited. They looked at what was intended for them—three small rib ends with a little meat attached to each—and passed it over in favour of the thirteen-pound chunk intended for their father's supper. He started to growl, thought better of it, and indulgently watched the three fiercely attack the huge piece of meat that none of them could move. One by one, they rediscovered their own portions, and, growling defiance at the big fellow, attacked them with good appetite. The father then seized his own chunk in his mouth, leaped to a high shelf, and wrestled with it, unhindered by the problems of his newly acquired position of fatherhood.

The other morning, as I drove by the grotto, one cub was curled up over the back of the big fellow, the small head hidden by the coarse mane. Old Prince lay with his front feet

hanging over the edge of the highest bank in the grotto and the littlest of the three was stretched across his two limp feet. Prince was half asleep, but he knew that he dare not rest the full weight of his heavy head upon the soft little body, and so when his head would nod until his chin just touched the soft fur he would jerk it up again and his eyes would snap open. Then the warm sunshine would have its way and he would drop off into a strained slumber holding his chin above the sleeping cub.

'You silly old fellow,' I thought, 'her mother would not be so patient. She would push her firmly away, put her chin down on her paws, and let the baby curl up somewhere else where she would be just as comfortable as she is now, disturbing your dreams.'

CHAPTER XXXVI

Bengal Babies

Babe, a fierce Bengal tiger, raised her first and largest litter of three magnificent cubs perfectly. We were taken completely by surprise, as we had not expected the birth for at least two more weeks. Since then she has raised several litters of two cubs. When a third was born it was either destroyed by her because it was weak, or consumed after it had died from natural causes.

All great cats carry their young in their mouths. Even after they weigh nine or ten pounds the mother will pick them up and jump on to a shelf or ledge several feet from the ground with the youngster held by the head and shoulders in teeth so sharp that you cannot understand why they do not penetrate the soft skin. The youngster seems to have no fear. When the mother takes hold his whole body becomes so limp that it hangs from her jaws like an old piece of fur.

Usually the tiger carries each cub in turn, but one day, while passing behind the grotto, I saw Babe pass the barred opening in the sleeping room with a cub in her mouth and an hour later she was still pacing the floor with the same baby, her head held high. She seemed excited. I suggested that the keeper investigate. He reported that he had been watching her for several days and that it was always the little male cub she was holding while pacing the floor for an hour or so during the early morning. When finally she put the cub down he seemed entirely normal and tried to keep away from her. The keeper, an old circus man, thought her peculiar conduct just the natural partiality of a mother towards a male child.

Careful observation soon convinced us, however, that partiality or not, so much devotion was doing the cub no good. He was beginning to hold his little head on one side and to shake it as if his ear bothered him. Long before we intended to do so, we turned the tigress and her babies out into the big grotto where she would have more diversion and the cubs more room to play.

The ruse succeeded. Babe ceased to carry the cub about, but he continued, for almost a year, to cock his head to one side and shake it frequently. By that time we were certain that something was wrong from which he was not going to recover without medical or surgical treatment. He was brought into the hospital, where he was anaesthetized so that X-rays might be taken of his head and neck. These revealed that the tiny bones had become so injured while still very soft that they had grown together in a solid curve and that a large tumour had developed between the last vertebra and the skull. It was this that had been giving him constant pain. As there was no hope of his ever recovering, the little fellow was put permanently to sleep while still under the anaesthetic.

Baby tigers are by far the most beautiful of all the great cats, having at birth as many stripes as they will ever have.

CHAPTER XXXVII

Leopards and Jaguars

1. SPOTS: DIM AND BRIGHT

The leopard mother, especially the black leopard, is the most nervous of the cats, and both before and after birth needs more and longer seclusion from the world. She is more fiercely resentful of being separated even temporarily from her babies than any other cat. For this reason we have been unable to enjoy the early infancy of these youngsters, which must surely grow between their spots, for there is scarcely room for a pinhead between them when they are born. Nevertheless, we have derived much pleasure from them when they become old enough to become so secure in the affections of their mother that we know she will always take them back. The mothers examine and sniff them thoroughly when they are returned, and, if the man smell is too strong, they wash them vigorously with their rough tongues.

Our spotted-leopard father, Elmo, came to us seventeen years ago when just a cub, and we raised him by hand. He is still one of the friendliest and largest leopards I have ever seen. He has had several mates during these long years and is the father of fifteen children, all of whom he has treated with the greatest indulgence. His present mate, and probably his last, is Sweetheart, the daughter of a spotted father and black mother. She was raised by the famous leopard trainer, Olga Celeste. Sweetheart is a gorgeous rich brown, and when you look along her side you see that each hair is tipped with chocolate or black, giving in some lights a much darker colour than that of the average leopard.

The melanotic character of the black leopard can be seen easily when the sun shines directly on the coat, for the spots are then plainly visible. If Sweetheart had been mated to a black leopard her children would no doubt have been black.

Elmo lies along the limb of his tree while his mate and cubs play on the floor below him. He straddles the broad limb with his legs hanging loosely on either side. When the cubs finally grow large enough to climb up beside him they either crowd him off or lie with their heads resting on his great broad back.

Family life in the black-leopard cage is very different. Our first pair of blacks came from the Orient in 1927, and very shortly after their arrival the female gave birth to two cubs. From her excellent care of them, in the temporary cage they were forced to occupy, I judged that she had raised several litters. As both were males, and could not live in the cage with their father, they had to find homes in other zoos.

The story of our black leopards would not be complete without recounting a wonderful experience with a fierce young black female. We had purchased her from another zoo, and we had so much difficulty coaxing her out of her shipping crate that we finally left it lashed to the door of her cage. When we saw her again she was lying on the shelf. We did not have a real chance to see her for several days because of her timidity. Then we discovered that she was very lame, had a badly curved back, and that her hind legs wavered when she walked. We took her to the hospital and tried to do something for her, even though the X-ray films showed that she had a permanent curvature and stiffness of the spine due to rickets when very young.

No matter how much we were forced to handle and work with her, she never seemed to become adjusted to our care. Her yellow eyes glared with hate, and her hot breath as she snarled at us showed her anger. One day I took Emma-Lindsay Squier to see her, for she had brought from the

mountains a great armful of catnip for a treat. Emma-Lindsay walked up close to the snarling cat lying on the shelf near the side of her hospital crate. She opened her mouth to spit, but suddenly she started to drool, for she had caught the delightful aroma of the plant. There was a peculiar choking sound and it was very difficult to tell whether it was a growl or a purr, or both. Emma-Lindsay extended her branches, and the excited cat pressed her nose against the wire. As Emma-Lindsay pushed the leaves through the great cat rolled and rubbed against them, revelling in the odour and the feel of the sticks against her coat. Emma-Lindsay stood with her hand on the wire close to the cat's head, and just as I went to warn her the cat rolled over and, pressing her nose against the wire, she licked the palm of her hand. It was the most remarkable capitulation I have ever seen.

The leopard never forgot Emma-Lindsay Squier. Even though she came many times with bare hands, she was always greeted with that friendly purring growl that no-one else was ever accorded. Exercise and treatment doing no good, the poor creature finally had to be put to sleep. She was neither fit for an exhibit nor could she have taken care of herself among her fellows.

At present we have two young black leopards just old enough to be coming out of the sleeping-room, where they have lived until now. One is bold and brave, stalking out behind his mother and exploring the cage ready to do battle. The other and larger one is a great coward, huddling near the sleeping-room ready to spring into safety at every footstep. His mother does not worry. She probably knows that the more cowardly he is now the fiercer and more relentless he will be after a while. These are posthumous children of our old father, and probably will be the beginning of a new dynasty in the zoo, for the mother is well along in years, and after mothering ten cubs cannot be expected to be bothered with babies for ever.

Big Killers: The Cat Family

2. THE HUNTING LEOPARD

Sometimes thought of as a dog, again as a cat, but actually a member of the felines, is the strange animal called the cheetah, found in Africa and Asia. It can be trained to hunt like a hound and rich Indian potentates pay high prices for a well-trained hunting leopard, as the cheetah is often called.

The cheetah is spotted, not with the rosette or group spots characteristic of the jaguar and leopard, but with single, jet-black spots on a light tan background. It has a noble head very much like that of a short-nosed dog, and its great eyes look back into yours as do the eyes of a dog. Doglike, also, are its teeth; long, straight legs, slender and firm from the knees down; and the small round feet upon which it steps firmly and stiffly. The nails, which are not retractile and sheathed like those of a cat, also betray its close relationship to the dog. Once having overtaken an antelope it passes it to grab the throat like a dog, instead of pouncing upon its back, like a cat, to be carried along as it tears down its prey. In every other way—its purr, snarl, sway-back body, and long, switching tail—it is feline.

For a short distance the cheetah is the fastest-running animal in the world, but it has little endurance; so it is used most often to hunt the fleet Indian antelope. Blindfolded, the cheetah is taken to the field in a cart in which he is held until a herd of antelope is sighted. Then he is released, the blindfold is removed, and the short swift chase begins. One strike at the throat of the small black buck is usually sufficient. But if the cheetah misses, the hunt is over for the day.

Although all the rest of the feline tribe bear young frequently in captivity, I know of no cheetah doing so in a zoo, outside perhaps the area to which they are native. All cheetahs are born in the wild, captured when young by natives, and raised by hand. They are always handsome and are usually docile and friendly.

We were greatly complimented when Martin and Osa Johnson presented us with Bong, a magnificent cheetah. He

was given to us because the Johnsons were planning an expedition in Africa which was to be largely by aeroplane and in which they knew Bong could have no place. Never, with the possible exception of Marie, was an animal in the zoo more universally loved and admired. The gentle disposition, dignity, and reliability of a dog and the cunning of a cat were strangely and interestingly mixed in his nature. The Johnsons had raised him from a delicate baby and had treated him like a dog. He had lived in their New York apartment and was exercised in Central Park. He knew all about motor vehicles, tramcars, and people. But, like all animals raised with human companionship, he feared other animals. The one exception was dogs, which he hated more than anything else in the world. When he was riding in a car and saw a dog, his hair would stand on end, and he would tremble with rage. Martin and Osa Johnson had two rather unhappy experiences with this aversion while he was still with them in their New York apartment. There were also certain people to whom he took an instantaneous dislike despite the fact that he was tame and friendly generally. To them he could be very ugly.

For his first Sunday in the zoo we decided to put Bong in a cage in the primate row, in the very centre of the garden, where people coming to see him could find him easily. On entering the cage he saw, on one side, a couple of chimpanzees climbing the wire separating their quarters from his and staring at him curiously. When he looked at them, they began to scream excitedly and shriek in the hideous way of a chimpanzee. He drew hurriedly away, only to find, on his other side, two huge, shaggy orangs hanging from the top of their enclosure and watching him closely. Seeing hostility in their gaze, he looked frantically about for a safe refuge. He dashed first to one side and then to the other, and finally hurled himself at the wire in an effort to be free. He fell back, apparently dead.

The keeper of our primates was one of the quickest men to act in an emergency that I have ever seen. Fearless of dan-

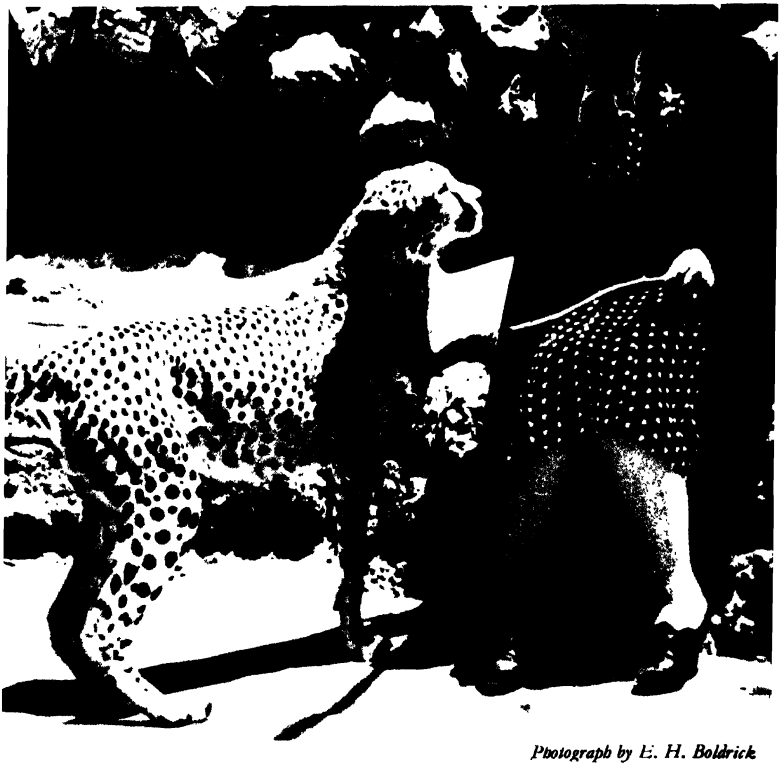
ger, he jumped through the gate and, seizing the limp figure of Bong, began to stimulate his respiration and to stir his apparently still heart by rapid massage. When, after several minutes, he saw signs of revival he redoubled his efforts. Meanwhile the veterinarian arrived and administered a stimulant. Bong began to regain consciousness rapidly, but before he could do so completely we carried him to his own familiar crate and took him back to the quarantine quarters in the hospital. In two hours, he appeared to be entirely normal and to have completely forgotten his fright. Our relief was great, for the experience was a terrible one, without precedent in our zoo history. That a carnivorous animal should fear an ape completely reversed conditions as we knew them.

At last the time came when Bong, for his own good, must be taken out of the house again and fitted into a cage. A special enclosure was built for him in a conspicuous, though sheltered, spot near the camel pen. It was on level ground with a sand floor and plentiful shade. Bong soon sensed that he was going out into the great world again. He was nervous but quiet. Pushing himself against the open end of his box, where I was standing, he began to purr, apparently seeking the comfort of the human companionship he enjoyed. When the moment came to turn him out into his new home, he walked to the exit almost shaking with nervousness. Then he looked at us as though he felt sure we would not subject him to real danger. By this time we had become friends whom he trusted.

It took no forcing to get him out of the crate and into a house located in his new pen. There, however, he smelled strange creatures. Timidly he put his head out of the door and, seeing nothing but trees, walked forth. But he remained near the wall of the house. Reaching the corner, he peered around it cautiously. He saw the camel family standing as close to his cage as they could get, wondering who their new neighbour would be. They saw an animal that looked dangerously like a leopard. So they snorted and blew their foul

Associated Press Photograph

A basketful of spotted babies



Photograph by E. H. Boldrick

eath towards him. Bong started back into his house terri-
d.

Suddenly—just within the door—he turned and walked
ght back out into the open. He looked over at us confidently
id then stared at the camels. His body was trembling, but
stood still, his magnificent head elevated, and looked long
id hard. He seemed to study the whole situation. Then he
alked on past his house to the side of his enclosure farthest
om the terrifying beasts, putting some forty feet between
mself and them. Then, as though ashamed of his former
eakness, he walked back to the spot nearest the camels and
ere made himself stand, with his whole body quivering
ith fear, while he stared at the camels until, their curiosity
atisfied, they indifferently walked away to continue their
egular life.

During the ensuing week I spent much time with Bong,
specially early in the day, for I knew that he had only con-
rolled and not conquered his fear. At the end of that time he
vas able to come out in the morning without first glancing
pprehensively towards the camel pen, and no longer found
t necessary to retire to his house to relax. He could now rest
n any part of his pen. His victory was complete.

I could take Bong anywhere, and he was popular with both
isitors and residents of the city. One day I took him to a
nen's service club where I was to be the luncheon speaker.
He followed me with his head close to my skirt while I held
the leash firmly in my hand. He lay down beside my chair
while I ate, but when I stood up to talk he was aroused. I
knew he was stirring about for I could feel the leash moving
in my hand. Suddenly the entire audience burst into a roar of
laughter and applause. Bong had mounted a chair at a small
table behind me and had put his nose down in a cream jug,
from which he was having a real drink.

Bong was a curiously high-strung, sensitive animal. We
learned that he had had several severe illnesses, beginning
with the rickets he had when the Johnsons rescued him. He
had a dainty and irregular appetite, drinking more milk than

most of the adult carnivores will accept. One day the keeper reported that Bong had refused to eat his meat. This was not alarming, but the next morning when he should have been hungry he refused his milk. I ordered him to the hospital, for his nose felt hot and dry and his eyes looked sunken. That was Friday. On Saturday he was listless and had no desire for food. We were very helpless, for he gave little indication of pain or real distress. On Sunday morning the doctor went to the hospital early to see if there had been any result from the medicine he had compelled Bong to take. Bong stood up weakly, then dropped in a sudden convulsion. The doctor called me quickly. But Bong was dead. He had cancer of the liver, shown by autopsy.

Two years ago we received two cheetahs as a gift from the Paris zoo. The female arrived in very bad condition from her long trip and had to be hospitalized. She died within a few days. Early in the morning, after their arrival, while making my trip around the Zoo I was startled by a clear chirp, loud and resonant and distinctly like the note of a bird. I had never heard just that tone before. When I neared the cheetah cage, I realized it had been made by the lonely male calling to his mate. The sweetness of the sound, together with its pathetic quality, distressed me more than any animal note I have ever heard. I stopped to pet and caress him, and until he became adjusted to his single state spent daily much more time with him than I could afford. Thanks again to Osa Johnson, he now has a second mate, and is happy and contented.

3. AMERICA'S GREAT SPOTTED CAT

The jaguar is the American representative of the spotted cats, but it is found only in tropical America. Like its near relative, the leopard, it has a black and spotted colour phase. In habit as well as character it is also very like the leopards of both Africa and India. It has, however, a heavier body and larger head and is more powerful.

Jaguars have been born in zoos, notably in the National

Zoo in Washington, D.C., which has a fine breeding pair. Our own experience has been limited to a fine young male presented to us by the United States Marine Corps stationed in Nicaragua. They received him when a cub from a member of the Nicaraguan Congress and wished very much to keep him because he was attractive, gentle, and lovable. But as he grew he became unmanageable due to too much petting and teasing. When he arrived at the zoo his teeth were broken from fighting back at his tormentors, but he soon quieted down in the unmolested freedom of a large cage.

For a long time we tried unsuccessfully to obtain a suitable jaguar mate for him. Despairing, we moved one of our own spotted leopards into the jaguar cage and ventured to open the steel doors between her and the huge male jaguar. To our complete satisfaction they were eager to join each other. They shared the cage harmoniously during the day and at night fed and slept in adjoining cages, separated only by bars. Finally they mated and we hoped that hybrid cubs might be born. Hybrids are not very desirable from an exhibition standpoint, but putting the spotted leopard with the jaguar did fulfil the need of the animals for companionship and natural family life, and was better than to deny them their instincts.

Then, in May 1939, Doctor Wegeforth, our President, brought a very fine and very tame female jaguar from the zoo at Belém, Brazil, to be the jaguar's true mate. The leopard with which he had lived for two years was taken away and we felt much satisfaction at having provided the grand old fellow with a proper companion. Alas for our attempts to play Providence. The substitution was not thankfully received by the jaguar. He spurned the new lady. He struck at her and spat with all his might. He rushed wildly around, whining for the leopard with whom he had been so happy. We stood by ready to defend the new cat, but she was perfectly capable of attending to her own affairs. She struck back, spitting like a vixen, and followed him up the ledges of the floor until she had him all but cornered. Then she lay

down on her side, purring as she snarled. Such an alluring, rosette-spotted jaguar was overwhelming. He patted at her gently—a little playfully, as kittens do—their paws touched, and then, having, figuratively speaking, put her in her place, he accepted her as his mate.

CHAPTER XXXVIII

El Lápiz and La Pluma

One of the most enchanting of my experiences has been the rearing of two mountain lions sent to us by E. C. Spencer and his wife from the United States Naval Base in Nicaragua. This family had become interested in collecting, caring for, and shipping specimens back to the zoo in San Diego. So when a nursing-mother puma was killed near the station her two cubs were found next day and brought into camp. They were named El Lápiz and La Pluma, meaning pencil and pen. They were very small, were still covered with spots, and had tiny white butterflylike mouths when they arrived in San Diego in a bird crate.

They were not in very good condition, however, due to too much handling and too many experimental dishes on the voyage north. Mrs. Spencer, who had come to San Diego just ahead of them, volunteered to keep them in her home for two weeks, during which she regulated their diet and restored their health. Then they were moved into my office, where my secretary and I adopted them jointly. This was her first experience with wild animal young, but she proved to be a devoted foster mother, and a skilful one, too. One of us would go over to the zoo for their last feeding at ten o'clock at night and the other for their first meal at six o'clock in the morning. It was a great relief when they began to sleep all night without food and we could limit their daily feedings to four. They looked upon the office as home and had no respect for curtains, mats, or furniture, and they destroyed many pairs of silk stockings.

In two months they became so strong that they could climb up on a bookshelf near my desk. There they would lie and purr until one or both would suddenly jump upon our unwary heads at a most inopportune moment. Finally, much to our regret, we had to move them outside, putting them in an empty monkey cage in our small private group. Each morning for more than a year my secretary came to the zoo early and, protecting her stockings as best she could, went into the cage and romped for an hour with the two fast-growing cats. She made old newspapers into large soft balls and tossed them the length of the cage. Sometimes there was real trouble if both cats went after one ball. They would retrieve it as well as a dog, bringing it back time after time for her to throw. Then, tired out, both would lie in her lap, put their faces up to hers to lick her with their rasping tongues, and after a little while would begin to purr, pushing their noses against her lap or their own big paws until they purred themselves to sleep.

They knew us as far as they could see us and long after the keeper thought we must not go into the cage we did so without fear. When eventually we ceased going in they would purr and rub their stiff whiskers against the wire where we held our hands. But after reaching sexual maturity they were occasionally irritable and cross, refusing to pay attention to our voices and keeping up a whining call to the jungle mates they eagerly desired.

Before I stopped going into the cage they would resort to their old favourite trick of springing to a shelf even with the top of my head. They would reach it in a single easy leap and lie there until I had unlocked the door and slipped in. Then they would spring, one at a time or together, on to my shoulders. Once they knocked me down to my knees and both crawled on the floor with me to the corner, where they tried to get into my lap.

Even while they were still small we always left the cage quickly when they were given their rib bones with dangling fringes of meat. Each would seize her bone in her mouth

with a vicious snarl and strike out in every direction lest someone or something attempt to rob her of her prey. Then, holding their heads high and far back in order to avoid dragging their food on the ground, they would circle the cage again and again, each looking for a place where the other could not intrude, and finally settle down, sometimes side by side, to gnaw and growl and shake and punish their food in true great-cat fashion.

So far as I know, our experiment of permitting two mountain-lion cubs to grow up in an open grotto—without bars or wire—is the only successful exhibition of any of the leopard, puma, or panther type of cat that has ever been carried out. When La Pluma and El Lápiz were fully grown they were taken out in order to repair the grotto and were not put back. This was due to the arrival of the two species of tigers for which the double grotto had been built. But I doubt that they would have remained there, if they had been put back, after having been given a chance to climb about in another cage.

The special cage for their group has a high arched ceiling and cavelike sleeping quarters, and is under an open arch of natural rock. Here they can lie exposed only in front to visitors, secure and protected from any approach except from one direction. There are logs on the floor for claw-trimming and in the centre stands an artificial tree of cement with many stout limbs. On these various members of the group will sprawl, lying flat on the belly, legs dangling on each side of the limb, perfectly relaxed, as they might be in the wild while waiting for sunset and the game animals to pass under the limb on their way to the water-hole or stream to drink their fill before going back into a compact herd to sleep in a protected or open place, where they would be apprised long in advance of approaching danger.

El Lápiz and La Pluma, like all hand-raised animals, were difficult to put into a cage with others of their kind. They believed they were the only such animals in the world. La Pluma, always the more temperamental of the two, fought and made so much trouble for us, and for herself, that she

had to be kept within her house much of the time that she should have been free. Finally, we placed her with the zoo in Auckland, New Zealand. I did not see her after she entered her crate; she had been a little too dear to me for me to endure it. But of all the zoos I know, I am glad she went to that one for I am sure they have taken a personal interest in her. They asked us to send a young mate with her and we obtained a darling from Jay Bruce, the California State lion-hunter, who loves the little pumas he raises. From all reports La Pluma and her mate are a happy couple, though so far as I know still childless.

El Lápiz finally adjusted herself to the group and is with us yet. She is now eight years old and purrs whenever I go near to speak to her.

PART 10

And Humans

CHAPTER XXXIX

Through the Zoo Gateway

I have been taking stock lately of the many important changes in my point of view which have come as a result of thirteen years in such close association with the lower orders of mammals. Much of the time I have been closer to animals than to human beings, except those associated with me in my work, and the more I have learned of animals the narrower has become the chasm separating man from animal, a fact which makes me somewhat inclined to think of man in his scientific classification of Homo sapiens, the highest order of primate.

Even after all these long years of work, it is still amazing to my old friends that Belle Benchley is managing a large zoo, and sometimes when I wake up worrying about Mbongo's foot or Katie's baby or how to keep within my always overworked budget, I feel just like the old woman who went to market, fell asleep, and woke up to find her petticoats cut to the knee. I, too, say to myself, 'Lack-a-mercy on us, this is none of I.' But I wonder if I really have changed very much internally. I still feel exactly like the little girl who ran barefooted over the sand dunes and flower-strewn hills of Point Loma, who talked to the wild rabbits and squirrels and poked her bare toes into the fringed mouths of sea anemones, who gathered horned toads and fought the boys to save the lives of tadpoles. And I still seem to be the mother and homelover who, for seventeen years, was wrapped up in cooking, gardening, and raising a son.

A look of surprise has come into many people's faces on

meeting me; they have not known what they were going to encounter when meeting a woman who directs a zoo. The second time I went on a collecting trip on a private yacht there were two wives and a sister going too. Perhaps they expected me to stride aboard ship in high boots, flourishing a 'bull whip' and smoking a pipe; but this would be a very poor idea of any zoo director, for we are all gentlemen, I hope, having been made so by our very closeness to the real and simple things of nature. But when I was invited into membership of the American Association of Zoological Parks and Aquariums and attended my first convention I was looked upon with a little incredulity by the men and much suspicion by their wives. I felt that I was really on trial, but I believe that I was accepted on a basis of equality with both and am now taken for granted.

Whatever pride in achievement I have had has been offset by the humility of spirit it has given me to learn how slight and how few are the real differences between man and beast, and that our great advantage lies in our power to convey and preserve our experience by artificial means, and, to some extent, to go on from where others have left off instead of learning the way of life only by our own experience. And I feel a little embarrassed at so clearly and publicly revealing some of my most private opinions. I am, however, very grateful that I have been born a human with the power to study, to control, and above all to love these lower forms individually and collectively, for this has not been given to any other of the living creatures except man.

Friendship, and wild, fierce, fighting, jealous love we find among them, and some creatures apparently mate for life. But the interest and love which encompass all individuals and species, that impersonal feeling or interest in the betterment of them generally, is left for man. It is an affair as much of the intellect as of the heart; it is something that grows with the experience not only of ourselves but of those others who, not permitting their free souls to be tied up in the activities of civilization, wander into the wild places of the earth

and bring back their experiences, in words and pictures, for the benefit of the rest of us. Since coming to live in this man-made jungle, I have become interested in the scientific classifications of creatures into families and species; I have also found myself, unconsciously at first, classifying the thousands of persons who troop through the zoo in the course of a year, and I have constructed several very distinct classifications. Some I love and some I do not.

A famous scientist remarked one day, as I sat with him upon a sunny bench, where he warmed his body in the bright sunny air while I warmed my soul in the radiance of his great insight into the ways of the wild world, 'The trouble with you is you would like to take your zoo off to an uninhabited island where nobody could see it but you.' And I thought of that a long time until finally it grew upon my consciousness that I was doing just that. I was missing the great joy to be found in the joint study of man and beast and the pleasure that could come to me from seeing the happiness the zoo gave to others, even those who did not appreciate it.

One day, in a moment of facetiousness, I said in a public speech that everyone except the blind could enjoy a zoo. Within a month, as though to punish me for shallow thinking, the President of the Braille Club telephoned to ask if the Club might hold its annual picnic in the zoo. I promised that it might. Then I began to worry about the situation, wondering what we might do to give the blind some conception of a zoo. The head keeper and I, putting our wits together, made a list of the creatures that could be safely handled by anyone, even a sightless visitor. When the day arrived we had a surprising list to submit to them from which to choose what they wished to 'see'. Every one of our men was on his toes that day to answer questions and help.

One aged gentleman desired more than anything to see again a turtle like those he used to find in the pools and streams of his native state. A small land tortoise which would not snap was handed to him and he carried it about all day. Another wished to see an elephant, and she did, from the rub-

bery hair in the end of the tail to the supple finger in the end of the trunk. And Queenie, our gentlest elephant, lay down so that she might be seen to the best advantage. Maggie, at that time a mere baby orang-outang, contributed her share of pleasure and knowledge by her cunning antics and her loving ways in the gentle arms and hands of these sensitive folk, and even a bottle-fed baby African lion purred loudly as it was passed from hand to hand. It was a gala day for us, especially when an excellent newsreel man, who had come to San Diego to make other shots, called to ask if there was anything doing at the zoo. When I told him there was, he came over immediately and made the unusual shot of the blind seeing the zoo. The blind talked about what they 'saw', and later the Club went in a body to see themselves seeing the animals on the screen, through the eyes of their leaders, and the comments they heard around them and their own voices reproduced. They have had not one but many picnics in the zoo since then. The zoo is a joy to everyone, not excluding the blind.

But to return to the classifications: among the lowest orders of human beings are those who must be funny at the expense of people who work in zoos and the animals themselves. So many persons who read the sign that says 'No Dogs Allowed' are sure that they are the first to turn to their companions and say wittily, 'That means you, Bob—stay out.' Or, when reading 'Children Free', how often the cute little woman of 160 pounds or more squats down and grins to her escort, 'I'm free, Papa.' We, too, must smile as though we had not heard the joke a million times. But these jokes are easy to stand compared with those of the people who use the animals as the objects of their wit. One man thought it funny to set the small monkeys wild with pain by tossing chili peppers into the cages, the juice on their hands transmitted to their eyes and nostrils causing acute agony.

One of the cruelest 'jokes' on record was committed by a man who grabbed the tail that Juanita, a pet spider monkey, extended through the wire to receive a peanut or bit of

candy. Holding it tightly he wound a stout rubber band round and round the tail, about eight inches from the end. He shouted with glee at the frantic efforts of the monkey to bite the band off when he released his hold. The keeper, discovering it, ejected the offender from the grounds, but it was an hour before we could catch the terrified monkey, although she was very tame. The end of the tail was so swollen and engorged that we feared it might have to be amputated. After weeks of attention it healed, but the scarred tail has never been the same strong, useful aid in climbing it was. The deeper scar, however, was in the mind of the affectionate little creature, who has ever since looked upon man as her enemy and refused to extend her tail to receive pea-nuts to the delight of the visitors to her cage.

A second order of man, clinging only slightly above the lowest rung of the ladder, is the tender-hearted individual who comes to enjoy, in a sort of sadistic way, finding fault with zoos. He is convinced that any animal confined in a zoo is an unhappy, sad, ill-treated creature who, pacing his cage, pines for freedom and longs for nothing but the wild where life is a struggle for existence, a hunt for food, and a never-ending vigil lest danger overtake him. The tender-hearted individual, who probably keeps a dog or cat shut up all day in an apartment except for a ten-minute walk in the park, strolls about sadly, but in reality having a glorious time feeling sorry for the animals. We like to make people happy, as we do our animals, but we fail to appreciate the mournful pleasure-seekers who do not grieve intelligently. They refuse to recognize the fact that animals who brood and mourn and resent captivity do not mate and bring forth young; do not have the shining, thick, soft coats, highly coloured faces, and glorious plumage that comes only with robust health, proper food, and a sense of security and well-being. They do not know that most animals in zoos to-day have been born in captivity and know no other home. They close their minds to the knowledge that all over the world, animals, birds, and even reptiles are being gathered and confined within zoos, or

within other protected areas, where they may be watched over and saved for future generations to see and enjoy by accomplishing those ends for which they were intended. Outside of such protected areas, they have only too often fallen prey to wanton killing. More tragic yet, the spread of civilization has usurped gradually most of the proper places for animals to live, so that they have been forced into regions where they die for lack of proper living conditions. Finally, the tender-hearted individual forgets that the knowledge and education leading to much of the best work in conservation is directly the result of the widespread interest in wild life fostered by zoos.

But more than that we deplore their ignorance, we resent the attempts of such people to discredit zoos through misrepresentation in articles and speeches designed to mould public opinion.

I have had two particularly unhappy experiences with people of this kind. One was with a columnist who, without having visited the zoo, publicly criticized it scathingly. Upon protest and investigation she apologized so openly and so handsomely that I forgave her almost completely.

The second episode happened very recently and still rankles deeply. I was reading at home one evening when suddenly the words 'San Diego Zoo' coming from the radio caught my attention. This did not surprise me at first, for we are often in the news, but I soon realized that the broadcast was not news. A 'philosopher' (self-styled) was reminiscing about a few hours he had recently spent in the San Diego Zoo, considered, he said, 'one of the most humane in the world'. One of these hours had been spent sitting in front of the gorilla exhibit where 'Two sad creatures were confined in a little inadequate cage.' They had sat high up in a corner gazing out over the tops of the trees and longing sadly for the freedom of their beloved Africa. In that one hour he found himself able to interpret their thoughts, although highly trained men have spent all day for weeks and months sitting there watching their every motion only to find them-

selves, at the end of that time, as completely baffled in their desire to measure the mental processes of a gorilla as they were in the beginning.

The Africa on which the gaze of Ngagi and Mbongo was focused was a big green gate in the east, through which their beloved keeper comes five times a day with pans of food.

From the gorilla cage he went down into a canyon and saw 'a little captive seal all alone in a pool'. And the little seal came to the fence and looked at him. Perhaps he stuck his cane through and poked it. The little seal followed him as though begging him to break the fence and free it so that it might find its way back down the canyon to the blue waters of the bay, and freedom. After he had left the seal, he turned to look back. The little fellow was in a corner watching him wistfully and longingly. The commentator's heart-throbbing eloquence almost brought tears to my eyes, but they were tears of helplessness that I could not tell him that the gorillas were watching the green gate, or the true story of Lily.

Lily was a baby fur seal, born while her mother was on her way to the zoo on board the yacht *Stranger*, belonging to Fred Lewis. Lily and her mother were put in a fine big tank of salt water where they were cared for tenderly by both Mr. and Mrs. Lewis, who would spare no pains or expense to give any animal, tame or wild, its every wish. Lily believed that all the water in the world was in that shallow tank where she rolled a few minutes a day and then climbed back on shore to lie and sleep, as is the way with baby seals. She knew one word of English, which she spoke over and over, calling everyone who came near her '*Ma-a-a-a*'.

When Lily arrived at the zoo, she was rolling fat and happy. She was given not a shallow tank, but a full-sized bathtub filled with warm salt water, placed in her room, which was heated to a constant eighty degrees, for she had come from the Galapagos Islands, lying right on the equator.

Lily looked upon the huge expanse of water and feared she might drown. So she stayed on a small platform at the slop-

ing end of the tub and we fed her there from a bottle, not with milk, but with warm water containing a strange mixture of finely ground fish, fish oil, salt, and iodine. When finally Lily ventured to slide down the end of the tub she swam its length under water, and shot up on to a platform at the other end. With her big, soft eyes, her cute baby face and round body, and her courage we could not help but love her. She grew and thrived and swam in her tub and learned to plunge down into the water and shoot up at the other end to make a complete circle in the air. She knew her keeper and loved him, as she did all of us.

Eventually she was taken down to the great pool, more than a hundred feet long, but she did not like other seals. So we put her in a smaller pool by herself. Her keeper at the hospital could not bear to have her pine for him. So he took down and carried to her the flat little platform that had been her table and sat beside her while she ate. Although she was seven months old and could eat anything, she still had to have her bottle beside her while she munched her chunks of fish rolled in bone meal and flavoured with halibut-liver oil. During the time she was eating the keeper would talk to her and pet her and answer all the questions children asked about her, encouraging them to play with her as he had done in the hospital.

Lily had never dreamed there was so much water in the whole wide world as the quantity she saw in her canyon pool. It was so deep it scared her. But when she went off into the deep water, after being coaxed to try it little by little, she swam joyously. Instinct asserted itself.

Lily became the most popular little creature in the zoo, coming to the fence when we called her name, playing with leaves that floated on the water, retrieving sticks that children threw to her, diving, swimming, and making loops in the air, more like a porpoise than a seal. One little girl gave her a big white ring that she would drop into the water and dive for and bring back to the children to be thrown out to her again. She hated people to leave her, for she never

dreamed she was a seal. She was a little child whom everyone loved.

So when the 'philosopher' walked by, she followed him in the hope that he would pick up just one little stick and toss it out into the pool to her. But he didn't. Disappointed, she watched him walk away, feeling no doubt that he was a very poor representative of his kind and very lacking in understanding of what a poor little playful seal wanted to tell him. She had no idea that he was feeling sorry for her because she was not out dodging sharks and fishermen in the big, blue ocean where she must fight for her food and for survival, and where the hand of man is not a friendly, loving hand but a cruel one, almost exterminating her race in its quest for beautiful skins to sell at a great price to vain ladies. All of Lily's ancestors, except possibly a very small group, are gone.

Some months after I had to listen to the 'philosopher's' condemnation of the zoo, I went on a trip to the northern part of the State. My pleasure in my return was shattered when I met Jack Dempsey, in charge of the open-grotto canyon, with a man, woman, and two large boys in tow. The boys had been reported shooting with catapults into the lion grotto. By the time Dempsey caught up with the family, they had progressed as far as the two elephant seals, and both boys were standing on a bench shooting at one of them.

Dempsey did not choose delicate words in bringing them to time and the parents became most indignant, declaring that the boys were not shooting because they had been stopped once and had been forbidden to do it any more. Their final argument was that the boys had bought the catapults (but not in the zoo), and, if against the law, why had they been sold? They declared that they could do no harm and that the dear boys would not try to hit the animals. They were just stirring them up. The catapults were confiscated and the boys sent out of the zoo. Later the father and mother left, both still indignant at the abuse their boys had received, and in spite of the fact that we had told them the cost of such

actions could not be counted at the time. They assured us that the boys would never do such a thing again, for they had been cruelly punished and were most ashamed. They also assured us that the boys had only shot at the lions and the elephant seals. That was on Saturday.

On Sunday morning, lying on the bottom of her pool, dead for ten or twelve hours, we found Lily, our beautiful Galapagos fur seal, the rarest zoological exhibit in the world and perhaps the only one of her species that had been alive. The autopsy showed that she had died of a sharp concussion of the brain, a sharp blow from something that had hit her just in the right spot on the head. The boys had taken careful aim and their parents had lied to protect them from the consequences of their cruel, unlawful conduct, so far as they were able.

Still another class of visitors is a group with a certain shamed or morbid curiosity about the private lives of animals. They seek me out and whisper embarrassedly concerning the sex life of creatures who are as natural and open in their conduct in their cages as they would be in the wild. At such times I wish I had a megaphone and could shout, 'Right this way, people, this lady (or gentleman) wishes to learn something about life. Come right this way. . . .'

Perhaps in this same class I should include some of the people who hang expectantly around animals, hoping and intending to be embarrassed by their natural conduct. They shiver as though what they are seeing is repulsive, or they giggle in a sort of self-conscious hysteria. But they do not go away. They linger, curious and interested, pretending not to look. If they realize suddenly that they are exciting curious glances towards themselves, they move away in true embarrassment, not having learned that the natural acts of animals are embarrassing only to the vulgar mind.

One afternoon a gentleman and his little girl were looking at the monkey-cage group. They were particularly interested in a tiny monkey in the arms of his mother. The child glanced up at me and asked, 'Where did the mamma monkey get her

baby?' I told her simply how she had carried it within her warm body all winter while the weather was cold, right close below her heart, and how, suddenly, it became too big to stay there any more, and so it came right out of the mother's body into her arms, which were waiting so gladly for it. When I had finished, the father of the happy little girl turned to me and said, 'Thank you for telling me that story, too.'

Not only are the animals in a zoo on exhibition, but most of the visitors as well. When people are gazing into the cages, the animals are gazing back at them with equal curiosity and interest and sometimes with more understanding. Occasionally people come to visit us who seem perfectly delightful to me, but towards whom every animal from the tiniest monkey to the greatest pachyderm shows antagonism. The animals know or sense something that I cannot. Perhaps it is fear, and the guest's interest that I regard as real may be only assumed for politeness' sake.

Again, another person visiting the zoo is known and loved by every creature immediately. This is seldom the one who makes the most advances to the animals. The creatures do the advancing, by reaching out friendly hands or coming to the fence or moat to show that they are friendly.

CHAPTER XL

It is for These

Among the visitors are people who love animals in a way in which few zoo directors or scientists do, that is, individually. These are the animal trainers who are found in circuses, vaudeville, and private life. Many, lacking the opportunity or the courage to join a circus or make contact with wild animals, fulfil their ambition by training their dogs, cats, and birds to obey their wills and perform very complicated tricks. I have met and enjoyed many of the famous trainers of America during my years at the zoo and find that they have so much in common with us zoo people that it is no wonder that half of the zoo keepers and many zoo executives have arrived at their posts by the circus route. Henry, who won old, abused Jiggs from an enemy into a devoted slave, was an animal trainer in his youth. He was a Bohemian by birth, huge and swarthy. His voice was deep and when he spoke gently it was almost a song; when he spoke harshly it made even me wish to jump to obey. From the day Maggie came to us until Henry's death 'she never got away with nothin'', although she never ceased to try. And I noticed that while Henry won Jiggs's confidence, and then her love, he was always her master.

Most of the animal men who have come to us, and gone, have been circus people. The years of hard work they put in caring for wild animals under unfavourable conditions and strict discipline have been of inestimable value. Their greatest asset is that they have learned never-ceasing, alert caution. They have learned that animals are 'not so dumb' and

are 'man-wise'. By this they mean that an animal raised or trained by man has learned to divine by man's actions, sometimes too far ahead, what a man intends to do and may beat him to it, a dangerous situation between man and beast. An animal 'broken' not in spirit and soul but in will, who has come to accept man as his master after he is grown, is a much safer animal in many ways than the animal raised by man.

I know this from actual experience. Once or twice I have known that I would not dare to enter the cage of El Lápiz and La Pluma, the pumas that sat on my lap until they were so large you could not see the lady for the cats. Even Mickey, my adopted tapir, after refusing one day to leave her pool until I had almost completely exhausted my resources and authority, came up and, after allowing herself to be petted and photographed, swung her heavy head at me with such sudden vicious intent that she almost bowled me over to trample me into the rocks and sand on the floor of her cage.

The animal trainer knows the temper of his beasts and the actual danger that lies behind one second's indifference either on his part or on that of his 'guardian angel' standing in the shadows with a loaded gun in his hand. The lives of the trainer and others depend upon perfect control, co-ordination, and not the tiniest slip in routine. The trained animal act in the circus of to-day no longer consists of a lion, or a number of lions, and a man. Animals of both sexes and of several species, without any possibility of a naturally friendly feeling towards each other, in all sorts of moods and physical conditions, are grouped together.

As I have sat right in front of the big, centre ring and watched the apparent coolness with which Mabel Stark, Olga Celeste, Bert Nelson, Clyde Beatty, Captain Jacobs, and other famous trainers have entered the arena, I have broken out in cold sweat and my mouth has become dry, not from excitement, but because of my knowledge that some of the big cats have been surly, ugly, and threatening for a day or two and because I know how tense and silent the per-

former is as he awaits the critical moment. I can never understand what it is that comes to the performer at the actual instant of entering the cage filled with physical danger. But when it does arrive, all fear, all tenseness is gone, and he is the cool master of his group, sure of himself, and the beasts know it, too.

I never knew half of the joy of a circus until I began to live in a zoo. One of the biggest thrills I have ever had was to sit with the managing director of Barnes' Animal Circus on opening night and have all the rough spots in the performance pointed out. It gave me an insight into the business of a circus, a side usually taken for granted just as is the business end of a zoo. And then, one day, Bert Nelson spied me and gave me 'the courtesy of the circus'—a special attention reserved by stars for honoured guests—and I was never so flattered or so pleased in my life.

On another occasion Mrs. Ringling invited me into her car behind the line of side shows, wagons, cooking tents, and dressing-rooms. She had then not only authority but most of the responsibility for running the great circus and was in complete charge so far as the Ringling interest was concerned. The car in which she lived was very like my office, with a desk and all the appurtenances of a business executive, including a secretary. My conception of her until then had been as imperfect as that of the people who say to me, every day in the year, 'My, it must be great to have nothing to do but walk around and play with animals.'

Later I had the honour of repaying her courtesy by inviting her to the zoo and permitting her to have dinner with the gorillas. That is, she stood behind their sleeping quarters and, in an intimate association permitted to very few, heard the murmured, whining comments of the great gorillas about the food they received, and saw the relish with which they chose and ate it. She gained a conception of their size and beauty which would have been impossible to acquire by seeing them only in the huge cage, which dwarfs their immense bodies. Turning to me, she said, 'That is the greatest show

on earth!' Then she added, 'Before long our circus, too, will have a gorilla.' And it has, too: Gargantua.

Perhaps when the circus folk visit the zoo, we come into our own more completely than at any other time. They crowd around the gorillas, study their muscular development and wonder how the gibbons do some of their stunts on the big poles—they who throw themselves into space with all the freedom and grace of the gibbon. They exclaim, 'Gosh, look at those forearm muscles; look at that back! Say, see him make that lift! He never looks. He just reaches out with his hand and there is the bar.' Then they launch into the technique of swings and somersaults, lifts and handholds, and their language is as mystifying as is the lingo of wrestlers around the gorilla cage.

Whenever the circus stops in a city where a zoo is prominent advantage is taken of expert advice upon any new condition that may have developed. Our hospital is always at the circus's disposal, and our doctor is often called into consultation about some feeding problem or some creature needing medical attention. The wild animals in circuses are subject to all sorts of contamination from people, and the zoo veterinarian is very often sought. His aid is gladly rendered, because we learn as much from helping them as they learn from us.

But with all the glamour and skill, the danger and thrill which I enjoy in the circus, with all the respect I feel for the courage and persistence of circus folk, I go back to the zoo, after a performance, more than ever in love with the wild natural creatures. I am glad, however, that my head keeper spent the years from the time he was fourteen until he came to us training animals and working in the menagerie of a circus. Charley Smith knows animals as well as he knows people, and this knowledge as well as his ingenuity in contriving mechanical devices to be used in controlling animals in a zoo, is largely part of his circus training. He can jump into a breach and take charge of any emergency. A successful circus man—a really successful one, not some bragging

roustabout—is a great fellow to tie to and have available in time of trouble or emergency.

Now, as we go up the scale of people we find in zoos, we come to that large class of people who do not know very much about zoo animals, who have not really known they wished to know because it has not been brought to their immediate attention. I never address a group on the subject of the zoo when some member of this particular class does not come to me after the talk and thank me sincerely for having opened a new avenue of interest for him. Sooner or later I meet him in the zoo looking for the very animals I mentioned. Sometimes, quite often in fact, these people become regular zoo fans and supporters of our work. Behind their interest is something solid and intelligent that does not sentimentalize or seek sensation, but which understands and interprets what is seen and heard in terms of reason and respect.

One day a lad of about thirteen came into the office in company with the head keeper. It seems that for the second or third time he had been caught in real mischief in the grounds. I was expected to administer some form of severe discipline and scare him into coming into the zoo in a different frame of mind, or staying out altogether and hating us and our work. At times my harassed keepers look upon me with contempt for my weak dealing with such cases; again, they glory in my righteous wrath and genuine explosions at certain breaches of decent behaviour.

I saw that this boy was terribly frightened and very defiant, and so I dismissed the man without even hearing his story. Then I offered the boy a chair and asked him to tell me what the trouble was. He started out denying and excusing, and I just let him go on excusing and denying until he had revealed the whole situation. He was at the very minute a truant from the near-by junior high school. The more he talked the more apologetic he became. I finally asked him his name. He blushed and said it. I was amazed, for not only was he connected with one of our most cultured people but some of

his near relatives were substantial supporters of the zoo. I told him it was too bad that he should be attempting to destroy what his family had tried so hard to build up so that he could enjoy it with the other children of the community. I launched into the great cost of upkeep and, taking out a financial statement, read to him the figure set aside for repairs to fences and benches and walls made necessary by mischief. I told him the zoo was a public investment, to which private individuals had given generously, and then I asked him if he wouldn't like to help us protect that investment in which members of his family had a share. I ended with, 'If you cannot help, I am going to ask you never to come back into the zoo until you are a man. That is all. . . . Go out this way, please.' He started to speak to me again, but I had become very busy. So he walked slowly out and I sat and wondered.

On the following Saturday the boy came back, such a clean, fresh, but shamefaced boy. He said, 'Could you eat lunch with me to-day?' Of course I could, and we had a grand visit and I told him about a new baby and some animals we were expecting to arrive within a few days. As we parted, he said, 'I am going out into the zoo to see what I can find to do to help and I'm going to get my whole gang to help you support the zoo. Gee, I never knew it cost so much—I just never thought.' And he did just that.

There are two aftermaths to this story. His gang has since grown up but they still come back helpfully. One day the Principal of the junior high school said to me, 'I don't know what you ever did to that gang, but they used to be ringleaders in all the trouble and now they all stand high in citizenship. The zoo is one of our greatest character-building agencies.' Sweet words, and sincere.

The other day when the university had closed for the summer, there walked into my office a tall, straight, clean young man and I had to look at him twice before I could be sure that he was my troublemaker of long ago. He took hold of my hand in both of his and exclaimed with his old, boyish inflec-

tion, 'Gee, Mrs. Benchley, I am glad to see you. I am taking a pre-medical course and it is all because I found out, right here in the zoo, that I had a flair for science.' There were tears in our eyes, and I knew that we were both thinking of and seeing a frightened, defiant boy hauled in by the heavy hand of a head keeper to the court of last resort.

On another occasion I saw a very delicate-appearing lady walking slowly through the zoo. I almost stopped and asked her to ride, she was so pale and ill-looking. But she walked slowly on and after a while I saw her sit on a bench overlooking the bear cages. That was as far as she got that day. But the next day she was back, and the next and the next, and each day she penetrated a little farther into our jungle. One day she had a small box of marshmallows in her hand and I saw her at the bear grottoes.

For more than three years she has come into the zoo every day, even rainy days, and she walks the whole way from her home across the park. She looks well and happy and she walks with ease. She talks to the bears and they watch for her. They have learned their names from her and she brings a large basket with all sorts of goodies that bears adore. Each afternoon her audience grows, for she speaks in a low gentle voice to the bears and tells them what to do and, when they have done it, she gives them a reward.

People come back to the office to ask about that wonderful woman down there with the bears. She never dreamed she had the gift of training animals to obey her slightest word, until her daily trips to the zoo began. She had strolled in, wearily and listlessly, the first day merely because her doctor had ordered it. Now she has a new point of view and a real interest in life; she has gained in health and strength and happiness and is no longer the lady whom I passed and pitied.

Even though I regret that her interest has centred in one type of animal to the exclusion of all others, and perhaps too particularly in the fascinating little Peggy who stands up and dances at her request, I know that to some extent she has reached that high plane of understanding of certain animals

which is recognized by those who live in zoos. Just one person restored to physical health is worth all the effort, all the cost that is necessary to maintain a zoo, if any such justification were needed.

In the classification of animals, when we get up to the highest order of primates, it is difficult to agree upon which is the most intelligent, the most manlike physically, the most nearly approaching what we think of as human. So it is with the highest classes of zoo people. There are those who have done their adventuring within the confines of civilization, finding their interest in the wild creatures brought to and held captive in zoos through perhaps some accident of fate, as in my case. Then there is another great group of adventurous souls who, impelled by they know not what impulse, go boldly and sometimes blindly out into the wild stretches of the earth to discover for themselves what other lands may hold. A third class develops an interest in wild life in early youth, either as a result of wise direction or spontaneously, and throughout the scholastic years that follow adhere to the study of natural science, laying the foundation, through books and instruction, for future work along the lines of research and exploration.

Of these two latter groups, I should say very little. Their names are too well known to need any listing by me. They are met with every day in zoos; they have only to be heard or seen at work to be recognized. But they have a trait in common in addition to their love of animals, birds and beasts. They all have a simple, kindly manner. When I think of how I longed, yet dreaded, to meet some of them I have to smile. Most of them have walked up and have taken my hand in friendship, saying, 'I know you are Belle Benchley. I am So-and-So.' Then I realize that I have instantly been taken into the great group of people with one of the most fascinating of common interests. And we all talk at once, ask questions and answer them, and now and then we even listen, not a little but a lot. Men of science and literature with long

strings of letters after their names seem to forget that I am not one of them and treat me with a friendly comradeship and equality that never cease to surprise me, while they warm my innermost soul.

One day, after watching an experiment that had been tried successfully with all great apes and was being conducted as well as it could be upon our two gorillas, the important doctor carrying out the work turned to me and said, 'I wish you would write that down just as you saw it.'

I walked into my office and dictated it to my secretary. I had intended to go over it carefully before it reached him, but the secretary, not knowing this, handed him the rough draft. When he had read it, he came to me with shining eyes and said, 'Mrs. Benchley, I wish I could do what you have done. You wrote exactly what I saw but could not describe. If I could do that, I would write a book.'

And so I did.